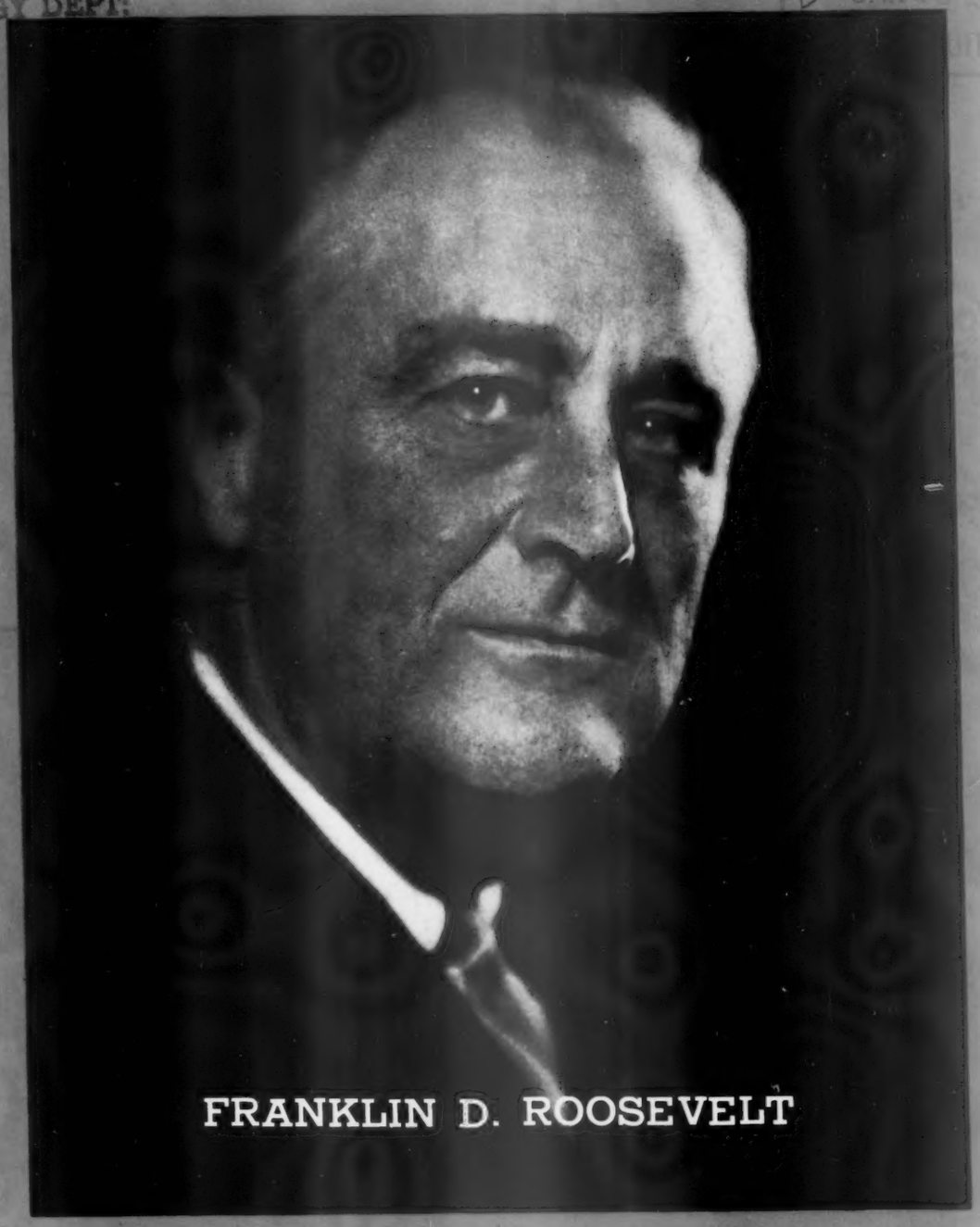
PURCHASING

THE NATIONAL MAGAZINE FOR PURCHASING AGENTS • SINCE 1915

TECHNOLOGY DEPT.



FRANKLIN D. ROOSEVELT

Commander-in-Chief of the Nation at War

A CONOVER • MAST PUBLICATION

35 CENTS PER COPY

JANUARY, 1942

He's in a tough spot, too...

BUT NEVER TOO TOUGH TO HELP YOU

If you think you're hard hit by material shortages, consider your Republic Distributor.

It's his job to stock and deliver the steels and steel products you need. He has built his business, invested his money and trained an organization to do it. He has always said "Yes" to all demands for Republic sheets, pipe, bolts and nuts, cold finished bars and shafting, boiler tubes, electrical conduit. But now, due to *Production for Victory,* he may have had to say "No, you can't have all your order" to some of his best friends.

Yet, he knows his customers are depending on him. He feels he must come through—some way. And when a man with that attitude is plugging for you, results are more likely to follow.

Tough as his position is, he's still getting results in meeting production emergencies. He still can supply you with sufficient amounts of some steels and steel products to make essential repairs, or to tide you over on war orders until mill shipments arrive. If he doesn't have the items you need, he will do everything possible to get them for you.

See your Republic Distributor *first*—and learn what he can do about your steel and steel product supply problems. Republic Steel Corporation, Cleveland, Ohio.

Berger Manufacturing Division • Culvert Division
Niles Steel Products Division • Steel and Tubes Division
Union Drawn Steel Division • Truscon Steel Company

REPUBLIC STEEL
PRODUCTION FOR VICTORY

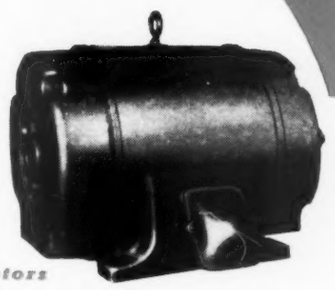
Republic

STEELS AND STEEL PRODUCTS

Look to CENTURY for

Correctly Protected Electric Motors for Hazardous Conditions

SPLASHING LIQUIDS FALLING SOLIDS



Plant wash down — below work line protection against falling chips — splashing cutting oil. You do not need an extra dog house to protect the motor.

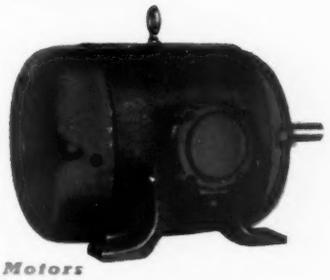
Use Century Splash Proof Motors

ABNORMAL ATMOSPHERES ACID AND ALKALI FUMES ABRASIVE DUSTS

Air saturated with oil or animal fats — current conducting or corroding dust — organic and inorganic acids — aklalies, etc.

Use Century Totally Enclosed Fan Cooled Motors

GASOLINE AND GASES EXPLOSIVES



Protection against atmospheres containing explosive quantities of gasoline, petroleum naphtha, alcohols, acetone, lacquer solvent vapors, and natural gases (Class 1, Group D) or explosive grain dust (Class 2, Group G)

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Century MOTORS

★ Century Motors are built in such a wide variety of kinds, types, and sizes up to 400 horsepower that it is an easy matter to select and properly apply the *right* motor for every job regardless of load and operating conditions.

245

If you are engaged in war work of any kind, get the facts on Century protected motors by calling in a Century Motor Specialist — there's one near you.

CENTURY ELECTRIC COMPANY
1806 Pine Street St. Louis, Missouri
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ONE OF THE LARGEST EXCLUSIVE MOTOR AND GENERATOR MANUFACTURERS IN THE WORLD

When writing Century Electric Company please mention Purchasing

NORTON ABRASIVES

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The introduction of new alloys with new standards of precision to shoot at is keeping research engineers constantly on their toes. The near-perfect surfaces are produced with abrasives—processes of grinding, lapping, and superfinishing are results of exhaustive research. Through their endless research, Norton research scientists are bringing abrasive finishing processes nearer and nearer to absolute mechanical perfection.

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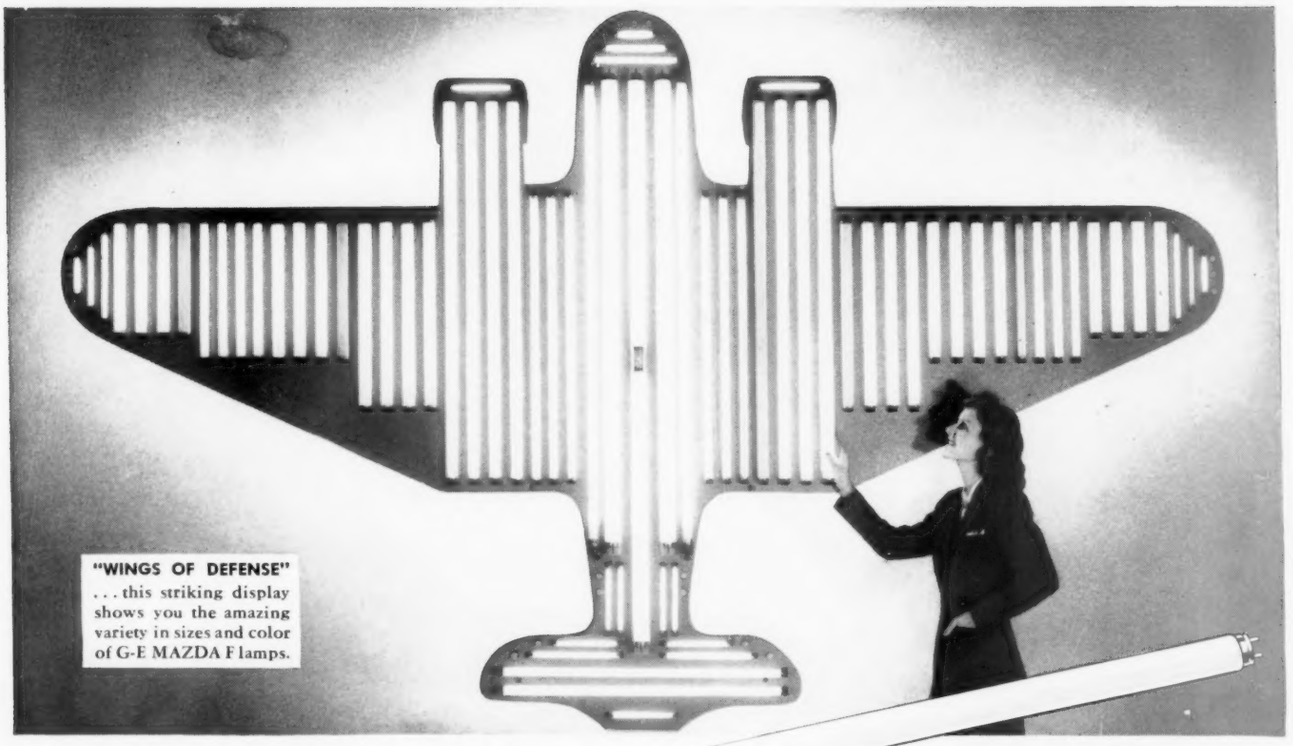
NORTON COMPANY, Worcester, Mass.

BEHR-MANNING DIVISION, TROY, N. Y.—Abrasive Paper and Cloth

WHEN IT'S AN ABRASIVE PROBLEM, CALL IN NORTON ENGINEERING

PURCHASING, published monthly by Conover-Mast Periodicals, Inc. Publication Office, East Stroudsburg, Pa. Editorial and Executive Offices, 205 East 42nd St., New York, N. Y. Entered as second-class matter January 7, 1941, at the Post Office in East Stroudsburg, Pa., under the act of March 3, 1879. Subscription, $3.00 a year in the U. S. A., Canada and Foreign $4.00. Volume XII, No. 1.



"WINGS OF DEFENSE" . . . this striking display shows you the amazing variety in sizes and color of G-E MAZDA F lamps.

Because more and more folks want these lamps

●The ever increasing demand for G-E MAZDA F (Fluorescent) lamps has resulted in many manufacturing economies in our fluorescent factories. In line with long established General Electric policy, these savings are passed along to our customers through the reduced prices on G-E MAZDA F lamps announced below, effective January 1, 1942.

This reduction marks another step in the downward trend of the cost of Better Light for Better Sight. (Since G-E MAZDA F lamps were first introduced in 1938 prices have been reduced as much as 60%). It is particularly significant now, since so many of these lamps are being used to supply cool, efficient "indoor daylight" for defense industries . . . to speed production, cut down waste and protect the eyesight of defense workers.

Effective January 1, 1942

NEW LOW PRICES ON G-E MAZDA F LAMPS

14-watt T-12	was 90c	. .	NOW	80c
15-watt T-8	was 75c	. .	NOW	65c
15-watt T-12	was 95c	. .	NOW	80c
20-watt T-12	was 95c	. .	NOW	80c
30-watt T-8	was 95c	. .	NOW	80c
40-watt T-12	was $1.35	. .	NOW	$1.15
100-watt T-17	was $3.00	. .	NOW	$2.60

Above prices refer to daylight and 3500° white.
Prices also reduced on soft white and colored G-E MAZDA F lamps.

G-E MAZDA LAMPS

GENERAL ELECTRIC

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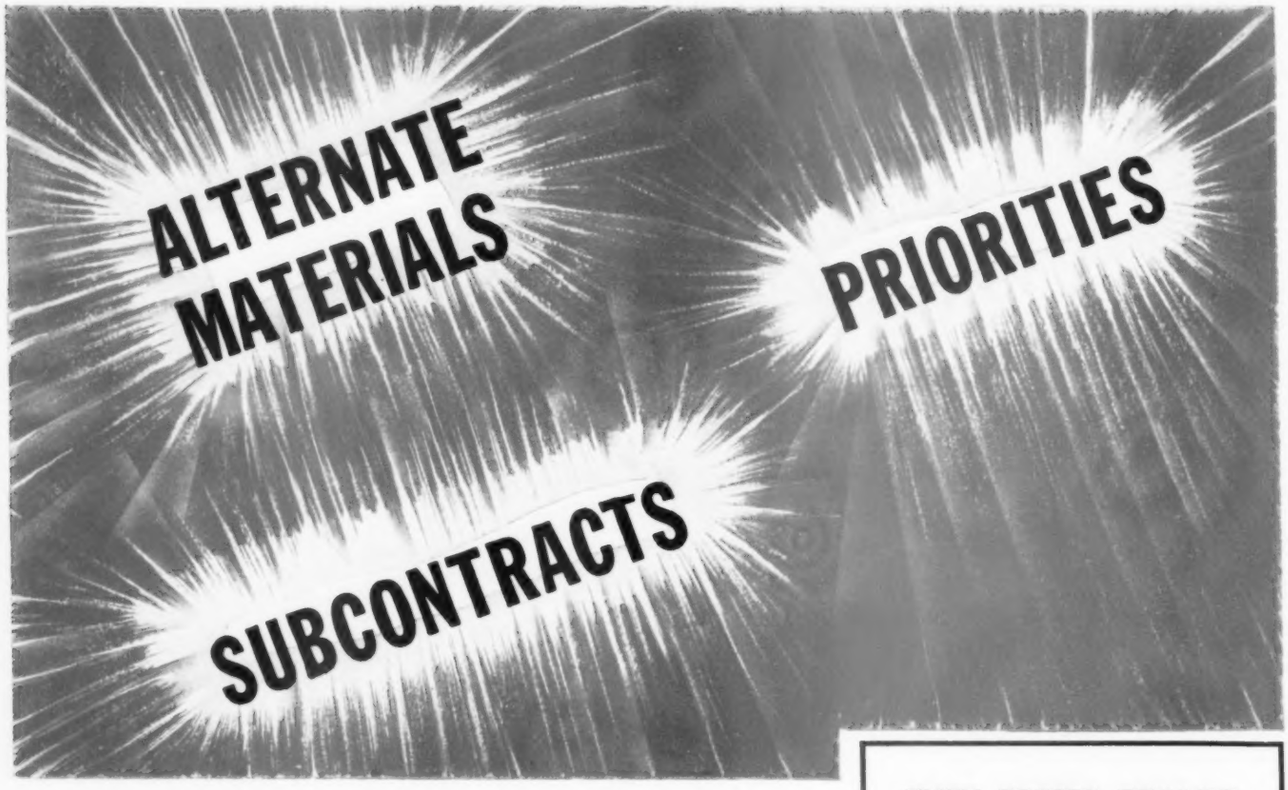

amid such bursting bombs...

GOVERNMENT requirements, economic restrictions and equipment shortages seem like bombs bursting around the heads of management in all lines.

In this situation, The Texas Company offers its help. For, to a greater extent than you may realize, a modern approach to the subject of *lubrication* can make the wheels turn faster, the plant produce more . . . *even with your present equipment.*

Outstanding performance has made Texaco preferred in the many fields listed in the panel. These Texaco users enjoy many benefits that can also be yours. A Texaco Lubrication Engineer will gladly cooperate . . . just phone the nearest of more than 2300 Texaco distribution points in the 48 States, or write:

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FOR ALL INDUSTRIES

RETURN METAL DRUMS PROMPTLY . . . thus helping to make present supply meet industry's needs and releasing metal for National Defense.

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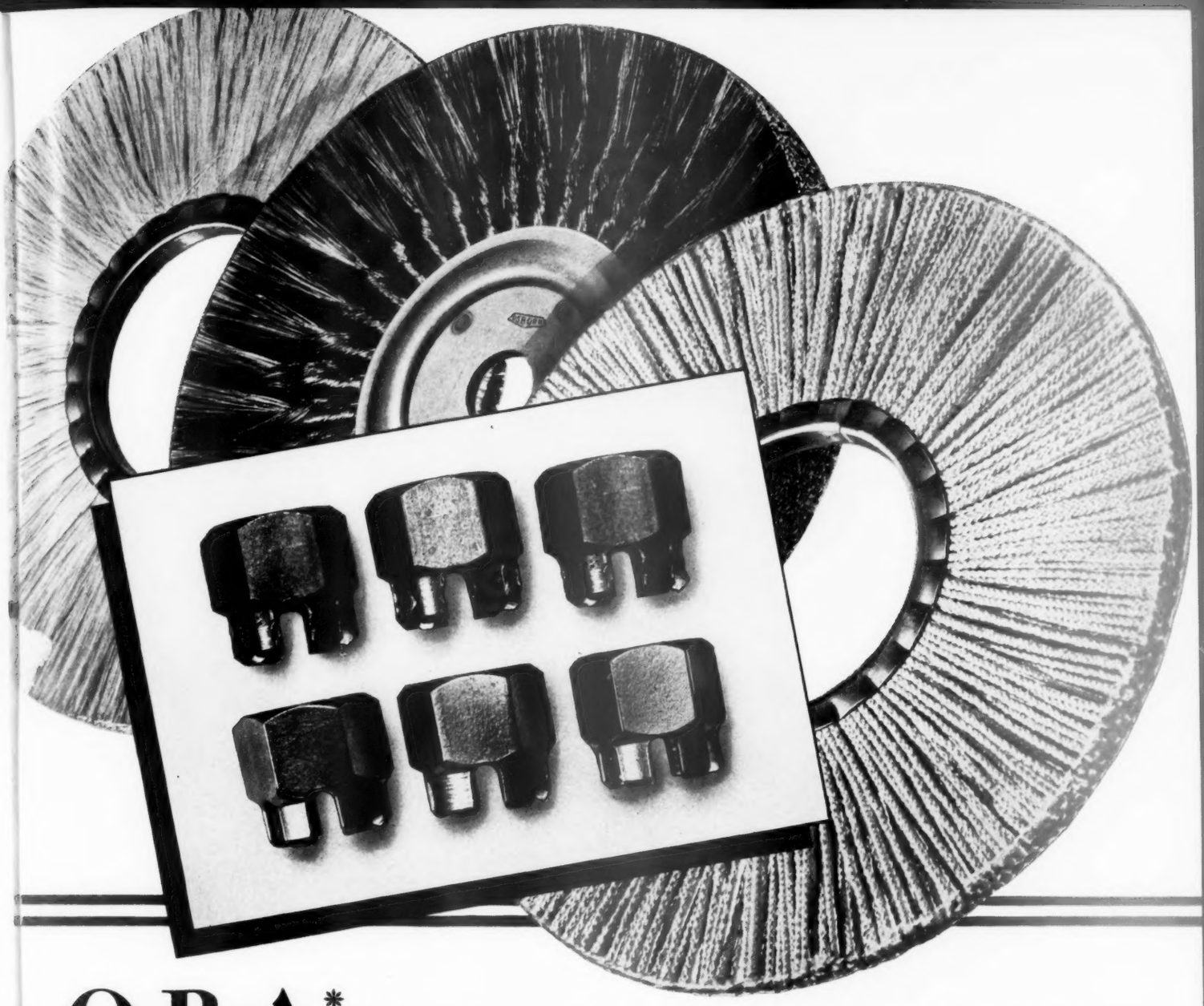


O.B.A.* Cracks a Nut Problem—And Gives the Aircraft Industry a Better Product—Faster!

● The castellated nuts shown above are small but vital parts used in aircraft engines. The three in the upper row have just come from the cutting machine. They are loaded with burrs and the edges have a knife-like sharpness. Both conditions must be remedied because (1) these nuts are attached to moving engine parts and have to be free of all burrs and foreign material that might break off and get into the oil; and (2) unless the sharp corners are broken, there is a possibility of their scratching highly stressed parts during assembly.

Osborn Brushing Specialists observed this finishing operation while conducting an Osborn Brushing Analysis in the plant of an aircraft parts manufacturer. Brushes were being employed for this purpose, but neither the desired finish or production speed was being obtained. After careful study, Osborn engineers developed an improved technique, using a combination of brush types and abrasives, which produces a better finish such as that obtained on the three nuts in the lower row, at speeds far in excess of present methods.

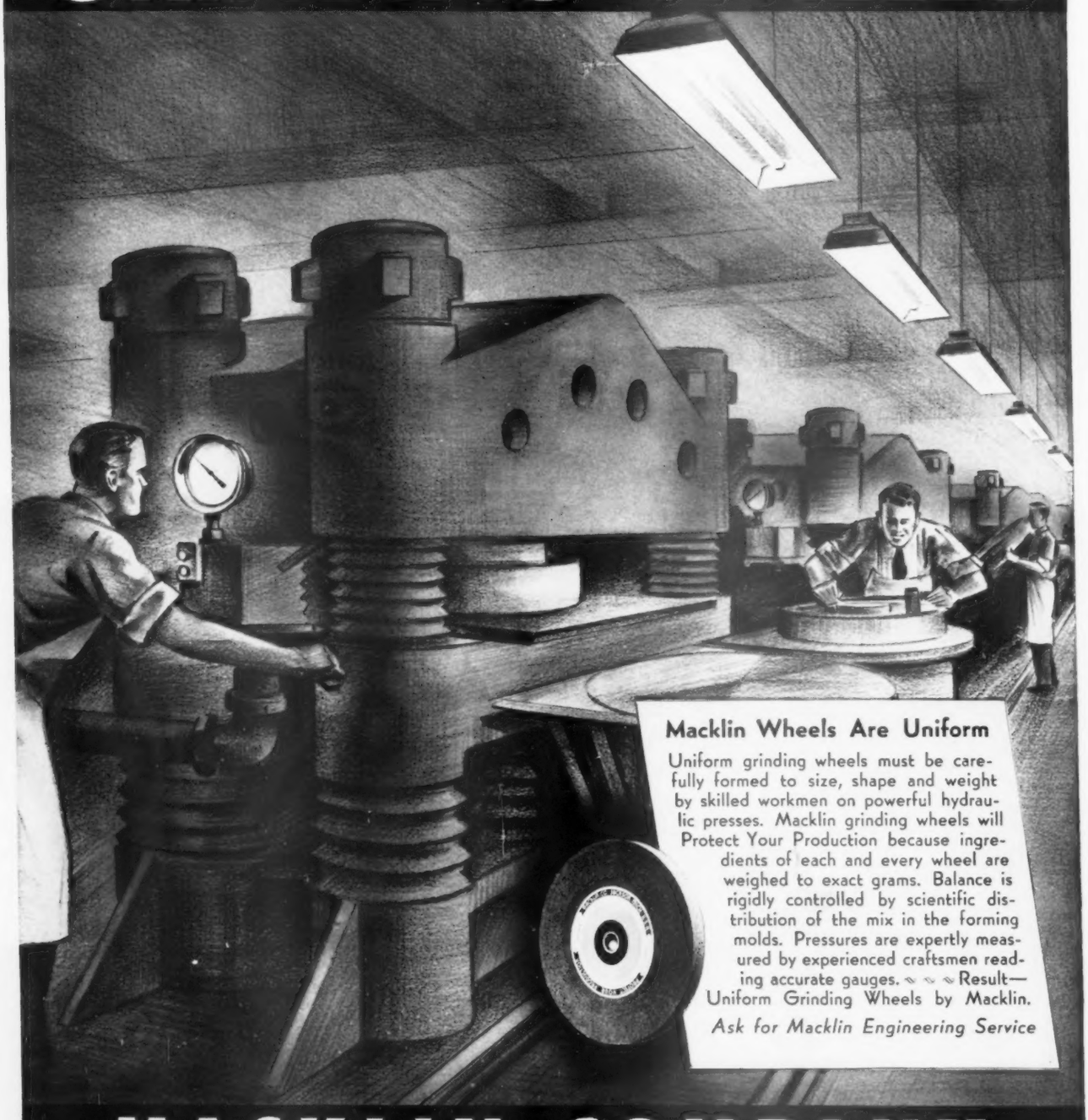
There are numerous other parts that require burr removal and the breaking of sharp corners. Osborn Brushing Specialists will be glad to show you how these operations can be handled efficiently with wire wheels, tampico brushes or cord sections, or any combination of these units. An Osborn Brushing Analysis of your plant will bring to light many such jobs where power brushes can speed production, cut costs and improve products. Write today for complete information. *The Osborn Manufacturing Company, 5401 Hamilton Avenue, Cleveland, Ohio.*

**Osborn Brushing Analysis*

Osborn Brushes

WORLD'S LARGEST MANUFACTURER OF
BRUSHES FOR INDUSTRY

MACKLIN
GRINDING WHEELS



Macklin Wheels Are Uniform

Uniform grinding wheels must be carefully formed to size, shape and weight by skilled workmen on powerful hydraulic presses. Macklin grinding wheels will Protect Your Production because ingredients of each and every wheel are weighed to exact grams. Balance is rigidly controlled by scientific distribution of the mix in the forming molds. Pressures are expertly measured by experienced craftsmen reading accurate gauges. ∿ ∿ ∿ Result—Uniform Grinding Wheels by Macklin.

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MACKLIN COMPANY

Manufacturers of **GRINDING WHEELS — JACKSON, MICHIGAN, U. S. A.**

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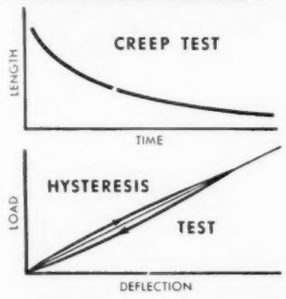
Springs get the CREEPS—This Measures Them

SPRING NEWS



In the creep test a fixed load is applied and the subsequent creep of spring recorded. To chart hysteresis curve, loads are added gradually and deflection noted. Then loads are removed gradually and new deflection noted. Results when plotted show the characteristic hysteresis loop.

FOR A LONG TIME it has been known that a slow plastic flow takes place in metals subjected to a constant load at elevated temperatures. Engineers have a word for it. They call it "creep". Creep has a pretty important bearing on certain precision applications. And, since precision springs are Hunter's business, Hunter naturally wanted to find out all it could about the effects of creep on spring metals.

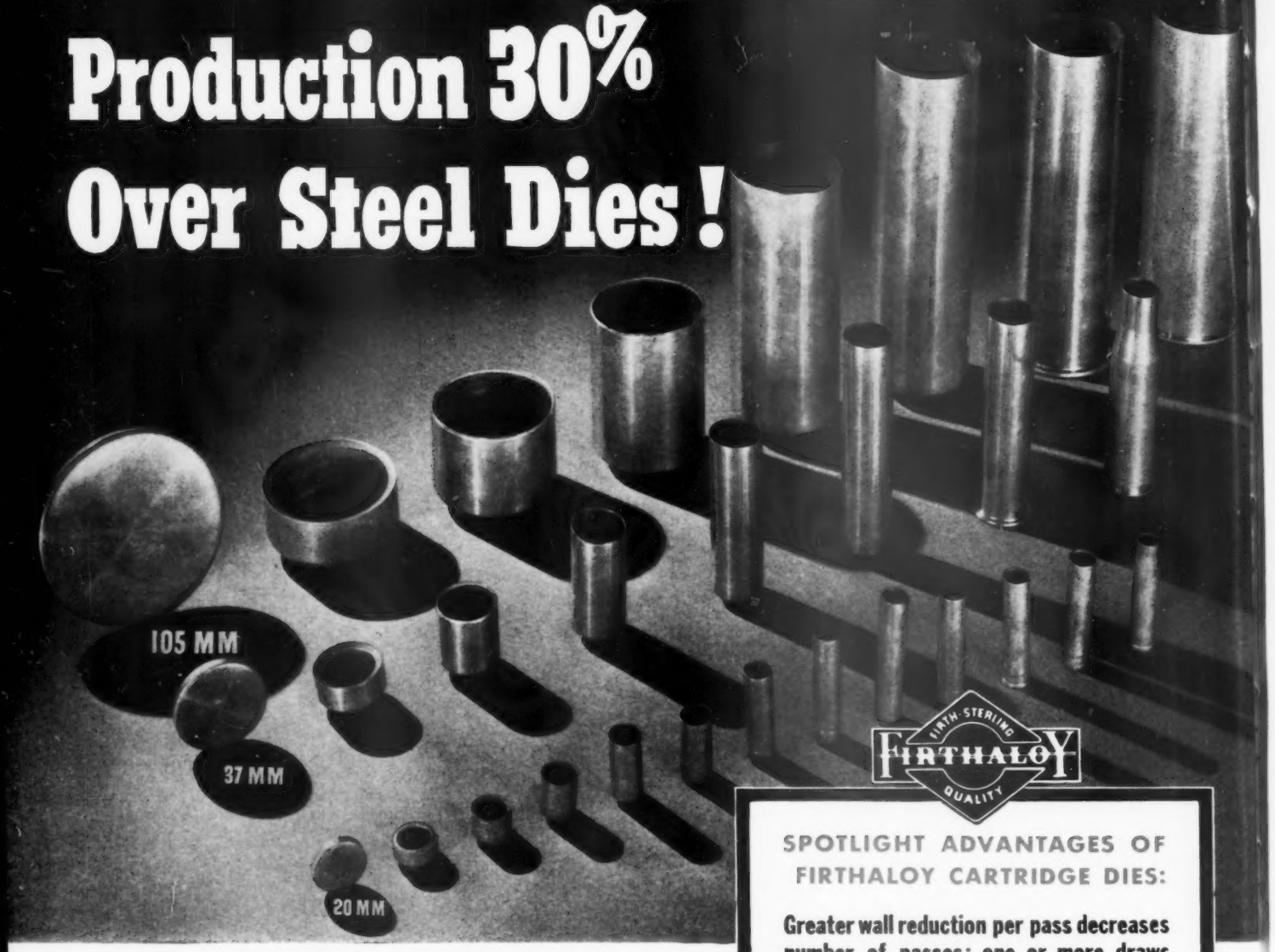
Thus an entirely new kind of automatic creep testing machine was evolved and built in the Hunter laboratories. This machine is a super-sensitive motion recorder which uses electronic detectors to shadow every micrometric change in length; enlarges them; then charts them plainly. More than that—*it even records its own errors automatically*—and presents for observation an accurate picture of hysteresis and elastic recovery, two other factors of value in perfecting spring performance.

The "creep" test machine is one of the means which Hunter uses to take the guesswork out of spring making, to develop new uses for springs, to improve springs for present applications,

HUNTER
Science in Springs

HUNTER PRESSED STEEL COMPANY, LANSDALE, PENNA.

FIRTHALOY* Boosts Shell Case Production 30% Over Steel Dies!



We're in a war. Speed-up of shell case manufacture is imperative!

FIRTHALOY solid or sectional Carbide Dies *definitely increase shell case production 30% to 35%!* For this vital manufacturing need FIRTHALOY Cupping and Drawing Dies have proved their productive superiority on cases from 20 mm. to 105 mm. diameter. The advantages of FIRTHALOY dies apply equally to small arms cartridge cases . . . for drawing, loading, pointing, tapering, heading and other requirements.

FIRTHALOY engineers will help you adapt them to your needs.

**FIRTHALOY is a Sintered Tungsten Carbide.*

FIRTH-STERLING FIRTHALOY QUALITY

SPOTLIGHT ADVANTAGES OF FIRTHALOY CARTRIDGE DIES:

Greater wall reduction per pass decreases number of passes; one or more draws eliminated.

Smoother, scratch-free finish and higher quality results in fewer rejects.

From disc to case 30% to 35% faster with cheaper shell for shell cost.

Less give, sink and wear because of FIRTHALOY'S near-diamond hardness and remarkable resistance to abrasive wear.

Longer runs; less unproductive down-time; greatly reduced die cost.

FIRTH-STERLING STEEL COMPANY

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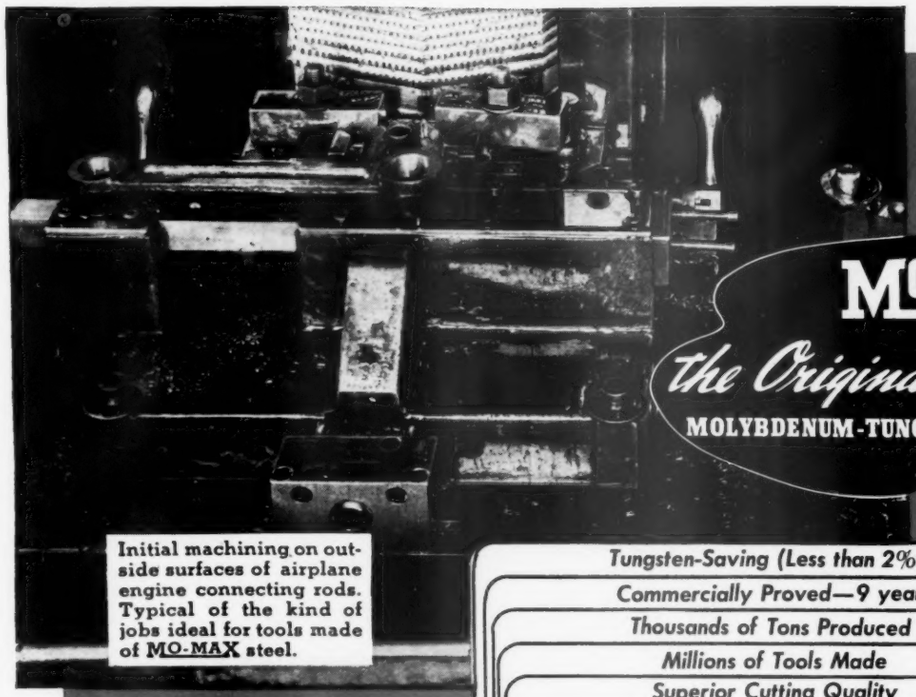

Initial machining on outside surfaces of airplane engine connecting rods. Typical of the kind of jobs ideal for tools made of MO-MAX steel.

MO-MAX

the Original Commercial

MOLYBDENUM-TUNGSTEN HIGH SPEED STEEL

Tungsten-Saving (Less than 2%w)
Commercially Proved—9 years
Thousands of Tons Produced
Millions of Tools Made
Superior Cutting Quality
Standard with 13 Leading Mills

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"Vul-Mo"	Vulcan Crucible Steel Co. Aliquippa, Pa.
"Mo-Tung"	Universal-Cyclops Steel Corp. Bridgeville, Pa.
"S.T.M."	Simonds Saw & Steel Co. Lockport, N. Y.
"Tatmo"	Latrobe Electric Steel Co. Latrobe, Pa.
"Mogul"	Jessop Steel Company Washington, Pa.
"Rex-T-Mo"	Halcomb Steel Company Syracuse, N. Y.
"Di-Mol"	Henry Disston & Sons, Inc. Philadelphia, Pa.
"Rex-T-Mo"	Crucible Steel Co. of America New York, N. Y.
"Molite 8"	Columbia Tool Steel Company Chicago Heights, Illinois
"Star Max"	Carpenter Steel Company Reading, Pa.
"Mo-Cut"	Braeburn Alloy Steel Corp. Braeburn, Pa.
"Bethlehem HM"	Bethlehem Steel Company Bethlehem, Pa.
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Formula for General Purpose

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Molybdenum	8.50
TUNGSTEN	1.50
Chromium	4.00
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THE CLEVELAND TWIST DRILL CO.

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6—CREEP-STRESS DATA.

Babcock & Wilcox Tube Co.

Contents: A handy technical data card listing the latest creep-stress data on B&W croloys and other tubular materials for high-temperature service. Catalog No. TDC-102-B.

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Black Drill Company.

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The Bristol Company.

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The Capewell Manufacturing Co.

Contents: A useful booklet describing the proper method and saw to use in cutting various metals. Includes both hack saw and band saw blades. A table gives the proper teeth and speed for cutting all types of metals with a band saw. 3½" x 6", 16 pages.

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Cortland Grinding Wheels Corp.

Contents: Features a segmental type of chuck that accommodates 4 abrasive segments. Is said to provide an easy and effective method of using segments and superior to the solid ring type of grinding. Photographs show product and its uses. 8½" x 11", 4 pages.

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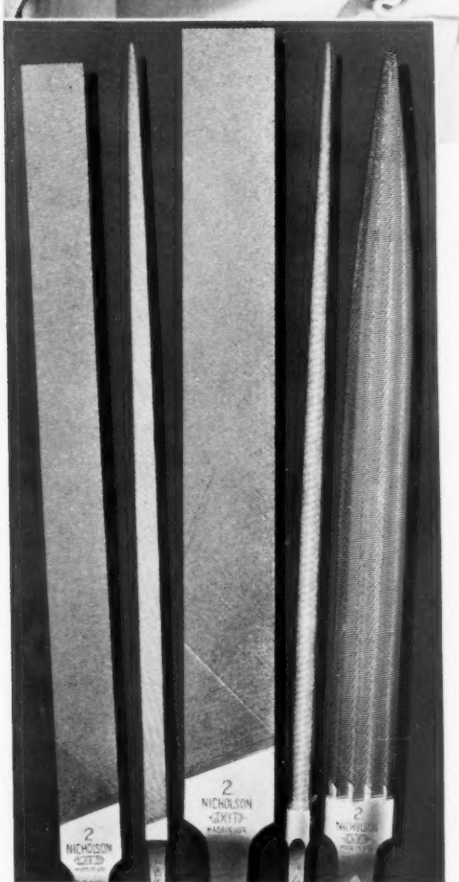
A FILE helps to keep it on the beam

Photo by courtesy United Air Lines



"LET'S GO! U.S.A." "KEEP 'EM FLYING!"

The automatic pilot of a modern transport plane is an instrument of almost uncanny performance. Keeping it in perfect tune calls for precision skill—and precision tools. Here you see an instrument expert using a Nicholson File on a delicate pilot part. It is a precision file. It is made with a keen yet silken-smooth bite that is possible only under ***exacting manufacturing standards*** and ***long experience*** . . . Nicholson heritages which enable Nicholson and Black Diamond Files to carry the extraordinary guarantee of ***Twelve perfect files in every dozen.***

Among the current heavy demands for Nicholson Files, one of the heaviest is for Nicholson X. F. (Extra Fine) Swiss Pattern Files . . . for the aircraft, automotive, die-making and fine-instrument industries particularly.

The world's largest file manufacturing plant is at peak capacity in turning out these fine files. Consult your mill-supply house.

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FREE TECHNICAL BULLETINS *and catalog information on X. F. Swiss Pattern, Die-cast, Aluminum, Brass, Stainless Steel, Foundry, Plastics, Shear Tooth and Long Angle Lathe Files. Write us for copies of Bulletins you want.*

• Five popular shapes (shown about 2/3 actual size) of Nicholson Die-sinker Files in Swiss Pattern. Points are smaller, tapers longer, cuts finer than in the conventional "American Pattern" files for similar purposes. Cleaning out, burring, enlarging small holes, shaping and finishing extra-narrow grooves, slots, notches and keyways are more readily accomplished.

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FOR EVERY PURPOSE

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Contents: Features both hand and wheeled types of CO_2 fire-fighting equipment. Shows details of valves and discharge horns. Also covers recharging equipment. Photographs of each type. Lists sales and service offices. 8 pages.

13—MACHINE TOOL DRIVES.

Cullman Wheel Company.

Contents: Features an individual electric motor unit designed to eliminate the countershaft and overhead belting used to drive cone pulley machines. Made in sizes from ¼ to 15 hp. Unit is mounted directly on machine. 4 page folder.

14—NYLON INDUSTRIAL BRUSH BRISTLES.

E. I. du Pont de Nemours & Company.

Contents: Outlines the advantages of brushes with nylon bristles and their use in breweries, textile mills, dairies, electroplating and other industries. Explains the properties of nylon and encloses a sample of the bristles.

15—TRANSPARENT ENCLOSURES.

E. I. du Pont de Nemours & Company.

Contents: Primarily for the aircraft industry, the book features the use of "lucite" in solving different types of transparent enclosure problems. Drawings show dimensions of enclosures used.

16—VIBRATION-PROOF FASTENERS.

Elastic Stop Nut Corporation.

Contents: A comprehensive and attractive catalog explaining the features of Elastic stop nut construction and describing the numerous styles and modifications. These include anchor nuts, hex nuts, channel nuts, and many special fittings for aircraft work. Full tables of specifications are included and numerous photographs and drawings show the many uses of the nuts and how they should be handled. Dimension drawings are given of the fittings. A heavy cover protects the 60 full size pages.

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Contents: Shows how to make, use and maintain sintered carbide cutting tools. Contains a wealth of useful information, with many drawings and photographs. Covers such features as forming shanks, furnace brazing, cleaning tips, torch brazing, rough grinding, finish grinding and final sharpening. Includes a hardness conversion chart, speeds and feeds charts, etc. 5″ x 7″, 64 pages.

18—AUTOMATIC VALVES.

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Contents: This complete catalog showing all types of valves, pressure regulators, pump governors and similar products, is offered to engineers working in defense industries, if requested on their company's letterhead. Ask for catalog 70. Address 109-117 Monroe St., Newark, New Jersey.

19—NEAR INFRA-RED PROCESS EQUIPMENT.

The Fostoria Pressed Steel Corp.

Contents: Describes the uses of near infra-red ray equipment for drying, baking, preheating, etc., and features many types of reflectors, sockets, channels, frames and stands for use in this method of heating. Different set-ups are shown by photographs. 16 pages.

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The Foxboro Company.

Contents: Described are temperature instruments for plating operations, including recorders, indicators, control valves and typical installation diagrams.

21—FLUORESCENT LIGHTING

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The Garland Company.

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23—ELECTRONIC MOTOR CONTROL.

General Electric Company.

Contents: Booklet explains the "thy-motrol" system of electronic control of d-c motors from an a-c line. Diagrams show how this stepless method of speed control is installed and used. 8 pages.

24—SEALING CORRUGATED BOXES.

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Contents: Contains useful information on the how and why of sealing corrugated shipping boxes. Sealing methods discussed include adhesives, gummed tape, staples or stitches, and wires or straps. 3½″ x 6″, 20 pages.

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Hunter Electro-Copyist, Inc.

Contents: Features electric photo-copying equipment designed for economically making photographic reproductions of anything typed or printed. 4 pages.

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THE WILL TO MAKE GOOD STEEL

MAKING the kind of steel our country demands for its defense program requires a thorough knowledge of the steels needed, an organization of skilled steel makers, the best of steel making equipment, and — above all — the W I L L to make good steel.

The Copperweld Steel Company is producing the following Aristoloy Steels particularly for National Defense: RIFLE AND GUN BARREL QUALITY, GUN QUALITY, SHOT QUALITY, BULLET CORE AND AIRCRAFT QUALITY.

"SPECIAL QUALITY" TOOL AND ELECTRIC FURNACE ALLOY STEELS

CARBON TOOL STEELS
ALLOY TOOL STEELS
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ARISTOLOY STEELS

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COPPERWELD STEEL COMPANY WARREN, OHIO

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Yours CATALOGS BULLETINS LITERATURE ON REQUEST

28—FLUORESCENT LIGHTING FIXTURES

Hygrade Sylvania Corporation.

Contents: Describes and gives the specifications of F-104, F-154, F-208 and F-308 miralumes designed for two or three 40-watt fluorescent lamps, and for continuous row lighting. Light distribution diagrams are shown, and tables give the light intensity for various mounting heights and row spacing. 4 pages.

29—METAL-CUTTING BAND SAW.

Johnson Machine Works.

Contents: Features a new metal-cutting band saw for accurately cutting off strips, bars or odd shapes. Many important advantages are claimed and numerated. Large photograph shows construction features. Close-ups show machine at work. 4 pages.

30—KOPPERS PRODUCTS.

Koppers Company.

Contents: Book summarizes all of Koppers' important plants, services and products. Two pages are devoted to the uses, technical description and characteristics of tar acids, tar acid oils, and coal tar solvents. 8 pages.

31—AUTOMATIC CONTROL EQUIPMENT.

Mason-Neilan Regulator Company.

Contents: Features many types of automatic control equipment, such as reducing valves, pressure regulators, level controls and recording thermometers, flow meters, and pressure gauges.

32—CARBIDE TOOLS AND BLANKS.

McKenna Metals Company.

Contents: A very complete catalog covering the specifications and prices of standard Kennametal steel-cutting carbide tools and blanks. Typical applications of each style tool are illustrated, and a great deal of information is given about the selection and design of tools and blanks, brazing tool blanks to shanks, boring tool set-ups and other engineering information. 36 full size pages.

33—CASTING IN DEFENSE WORK.

Meehanite Research Institute of America.

Contents: Booklet describes and illustrates Meehanite castings used in aircraft manufacture, gun and shell fabrication, machine tool castings and radio, marine, truck and steel mill equipment. Full size, 12 pages.

34—MEASURING INSTRUMENTS.

The Meriam Company.

Contents: Describes the company's line of U-type and Well-type manometers, draft gauges, flow meters, mercury pressure gauges, tank gauges and all accessories for accurately measuring pressures, vacuums and flows of liquids and gases. Full specification and list prices are given. 8 pages.

35—TAPE MOISTENER AND FEED.

Nashua Package Sealing Co.

Contents: Features the new "Tay-per" machine for moistening sealing tape and feeding out a predetermined length of tape. The advantages of this machine are discussed and photographs are shown.

36—MATERIALS USED IN GRINDING WHEELS.

Norton Company.

Contents: An interesting booklet explaining by text and photographs how the many materials used in making grinding wheels are drawn from all parts of the world. Many photographs show how raw materials are obtained, such as sulphur, lac, diamonds and bauxite. Diagrams show processes. Size of book 5″ x 7″, 36 pages.

37—ROPE SERVICE BOOK.

Plymouth Cordage Company

Contents: Explains about "50-50" brand rope, and which markets are restricted and which are not restricted by the government. Includes three small booklets on the correct uses and applications of rope. 6″ x 9″, 12 pages. 3 inserts.

38—ELECTRIC TOOLS.

The Porter-Cable Machine Co.

Contents: Covers their line of electric tools—floor, bench and portable sanders, hand saws, belt grinders, spindle and disc sanders. 12 page folder.

39—AIR CONTROL PRODUCTS.

A. Schrader's Son.

Contents: A comprehensive coverage of all types of air control equipment, including blow guns, fittings, couplings, many types of hose, ferrules and tools, blow valves, ejection sets and numerous other products. Featured are tip-toe and finger-tip controls for operating machine clutches by compressed air. Many diagrams show typical air control hook-ups. 8½″ x 11″, 48 pages.

40—CONSTANT VOLTAGE TRANSFORMERS.

Sola Electric Company.

Contents: Describes the electrical characteristics, operation and applications of these constant voltage transformers. Voltage regulation is provided by an auxiliary, resonant electrical circuit, so that there are no moving parts. Standard sizes range up to 10 kva, but other sizes are available on order. Photographs and diagrams help explain the operation and uses of these transformers. 8½″ x 11″, 24 pages.

41—CUTTING OIL.

Sulflo, Incorporated.

Contents: Describes the properties of and applications of Sulflo concentrate, a cutting oil base which is actually a stable suspension of finely divided sulphur. Discusses its use for drilling, gear cutting, punching, reaming, slitting, threading and for other machine operations. 6 page folder.

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SKILDRILL
ARE A "MUST" IN EVERY DEFENSE PLANT!
Now, more than ever before, you need these two modern SKILDRILLS to punch holes in every bottleneck . . . to speed your production flow! There's extra power, extra speed, extra ease of handling built into these two compact SKILDRILLS . . . for precision production drilling, for installation or assembly work in plants building aircraft, tanks and all other defense equipment.
Ask your distributor to demonstrate these SKILDRILLS on your own work. Once you see how they perform, you won't be without them!
SKILSAW, INC., 4761 Winnemac Ave., Chicago
New York, Boston, Buffalo, Philadelphia, Cleveland, Detroit, Kansas City, Atlanta, New Orleans, Los Angeles, Oakland, Dallas, Seattle, Toronto, Canada
SKILDRILL Model 80
Capacity ½ in. in steel, 1¼ in. in wood. Only 11½ in. long, 3½ in. wide, weighs only 8 lbs. Gets into tightest places.
SKILDRILL Model 45
Capacity ¼ in. in steel, ½ in. in wood. Only 6⅝ in. long, weighs only 2¾ lbs. Fits the palm of your hand.
SKILSAW PORTABLE ELECTRIC TOOLS
★ FOR THE DEFENSE OF AMERICA ★

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To lower POWER BIT Costs... buy

APEX

When you buy Power Bits, you are just buying service—so many thousand screws driven before the Bit is worn out.

And that's all APEX is trying to sell you — service in driving *more* screws, and *Plus Value* by reconditioning Apex-Phillips Bits for additional service.

An APEX-Phillips reconditioned Bit has the same quality, and will give the same service that it did originally. Thus, you see, the same Bit can be used time and time again before discarding. The nominal charge for reconditioning represents a substantial saving.

Many of the largest companies maintain a revolving supply of APEX-Phillips Power Bits. As Bits wear out, they are returned. These are replaced with reconditioned APEX-Phillips Bits sent in previously.

The investment in Phillips Power Bits is thus kept at the minimum; there is no loss of time in making replacements, and again APEX Service lowers Power Bit costs.

If you didn't know about this service, write us and we will explain it in detail.

Phillips License No. 2
Patent Nos. 2046837-38-40

The APEX MACHINE & TOOL CO.
Dayton, Ohio

F.O.B. *filosofty of buying*

THE gentleman from Michigan had the floor. According to the *Congressional Record* (November 13) he prefaced his remarks by declaring: "Mr. Speaker, before I came to Congress, I was for eighteen years a Purchasing Agent for a large industry." Thus did the Hon. Fred Van Ness Bradley recall his long and competent service to industry as Purchasing Agent for the Michigan Limestone and Chemical Company of Buffalo, N. Y., and later as Purchasing Agent for the Bradley Transportation Company of Rogers City, Mich. The point which he made was that perennial headache of the purchasing man when, in a real or in an avoidable emergency, the materials are procured in a verbal conversation with no proper consideration, planning or negotiation, and the purchasing department is then called upon to issue a confirmation order. Mr. Bradley considers that a poor way to do business in the ordinary civilian walks of life, and just as poor a way to run a government. He expressed the fear that the administration had been "sold a bill of goods" and lamented the fact that Congress had been issuing "confirmation order after confirmation order" to make good.

• •

"DON'T look now, but the man in the next phone booth might be a candidate for City Purchasing Agent," remarked columnist Frank X. Kelly of the Lawrence, Mass. *Sun*. Occasion for this remark was one of the wildest and wooliest scrambles for public office that we have heard of in many a moon. When P. A. Maurice F. McKenna recently retired on pension, the Mayor and Aldermen solemnly convened to choose a successor from among fifteen candidates, but were unable to reach a decision in 301 ballots during which two of the Aldermen voted loyally and consistently for their respective brothers while the Mayor also had a favorite candidate and the third Alderman spread his votes quite impartially over the remainder of the list. After two long and inconclusive sessions, it was decided to reject the original list and call for new candidates over the weekend. Forty-seven hopeful citizens expressed their willingness to serve and filed their applications. Columnist Kelly suggested that candidates wear distinctive white arm bands at the Council meeting, then reconsidered with the thought that it might be simpler if those who were not candidates wear the identifying arm bands. Surprisingly enough, in choosing from the larger field, a decision was reached on the 11th ballot—312th ballot of the entire procedure. Thomas A. Barry, currently serving as representative from the fifth Essex district, is the new Purchasing Agent.

• •

Blackout in reverse is the unique and effective protective strategy which some ingenious plants are using in these difficult days. Blinding lights trained upon the interloper make detailed observations impossible, and are calculated to give the potential spy a bad case of spots before the eyes.

• •

WASHINGTON defense offices are slogan-minded, and the walls are decorated with pungent reminders of the job to be done, so that neither the worker nor the visitor can forget our primary national objectives for a single moment. One of the very significant messages is displayed in O.P.A., where they are very much concerned with the price situation. It says:

"Inflation Comes by 5% Increases"

Think that one over; check it against some of the commodity markets in which you are dealing and watch the way the Cost-of-Living curve is creeping upward month by month. A mere 5% doesn't look important, but the cumulative ef-

fects may tell the story of our whole war and post-war economy.

• •

ONE phase of production which has been greatly stimulated by present conditions is that of amateur verse—and a great deal of it is very much to the point. Now it is coming with words and music. Edward C. VanCura, P. A. for the Pipe Line Service Corp., Franklin Park, Ill., answers to the call for "Author, Author!" on the following ditty, to be sung, appropriately, to the tune of "Oh, Promise Me" with apologies to Reginald DeKoven:

O.P.M.

Oh Promise Me that someday you and I
Will understand the wherefore and the why
Of all your regulations, rules and such,
Which merely seem to get us all in Dutch.
Why, oh why, must all this red tape be
In a land that loves, so much, its liberty?
Have faith; for our flag and country we'll come through,
Oh Promise me—we promise you.

• •

AND from the current issue of *Oregon Purchasing News* we quote the following ditty to be sung to the melody of Joyce Kilmer's "Trees": We'd like to give due credit for authorship, but it is listed as anonymous.

I hope that I shall never see
Another P. D. Eighty-Three

A form whose very presence seems
To bring on paper work in reams

It's never right the first time when
It's placed upon your desk and then

You send it back from whence it came
To get it back all wrong again

An A-10 rating soon will show
That OPA is just no go

Each buyer swears with vehemence
The steel he wants is for defense

Lord love the guy who must confess
His order rates a B or less

And so I dig on all the day
Through Lend-Lease C and Army A

An A-1 rating What to do?
Oh yes, it's right before A-2

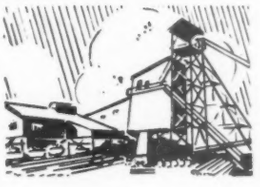
My tonnage quota is just swell
But my receipts—I hate to tell

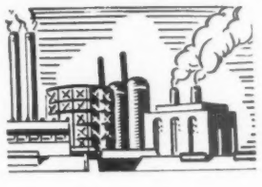
A-9 my sources cannot see—
In fact, no less than A-1-b

Our steel is gone, the warehouse bare
My assets are a vacant stare

Will nothing ever set me free
From the G. D. P. D. 83?

LESCHEN Serves *All* Industries





HOW can production be speeded? How can essential materials be best conserved? These, today, are vital questions.

With wire rope, the answer is in using the quality, construction, and type that can be installed the quickest . . . that will last the longest, and thus will do the most work for the amount of materials employed.

You can depend on Preformed "HERCULES" (Red-Strand) Wire Rope for this 2-Way Saving. It not only lasts longer—which means fewer replacements—but, because it is easier to handle, it can be installed more quickly. It provides all the advantages of the preforming process, *plus* the inherent qualities and advanced manufacturing methods that have long since caused the "Red-Strand" to be recognized as the sterling mark for wire rope.

Why not take advantage of this 2-way saving? In doing so you will also be reducing your operating costs, for the principles that make "HERCULES" long-lasting, also make for maximum economy.

Preformed "HERCULES" (Red-Strand) Wire Rope is furnished in both Round Strand and Flattened Strand constructions. In this one grade there is a right rope for every heavy-duty service.

MADE ONLY BY
A. LESCHEN & SONS ROPE CO.
WIRE ROPE MAKERS — ESTABLISHED 1857
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SAN FRANCISCO . . 520 Fourth Street
PORTLAND . . 914 N. W. 14th Avenue
SEATTLE . . 3410 First Avenue South

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WeldELLS *alone*

have these precision quarter-marks

THOSE four little unobtrusive marks on the ends of WeldELLS often look mighty big to the man on the job. For they provide accurate reference points that make it a lot easier to establish center lines, figure angles and offsets, and keep piping lined up in the proper plane.

Yes, the quarter-marks on WeldELLS save time and trouble and prevent costly errors. In fact, they are so useful that many practical piping men will tell you this feature alone would make WeldELLS their first choice. But actually there are at least seven other good reasons why you should insist on WeldELLS.*

Quarter-marks are an *exclusive* WeldELL feature—a typical example of the extra value you get in all Taylor Forge Welding Fittings and Forged Steel Flanges. Ask your local distributor for a copy of Taylor Forge Catalog No. 401.

TAYLOR FORGE & PIPE WORKS

General Offices & Works: Chicago, P.O. Box 485
New York Office: 50 Church St.
Philadelphia Office: Broad Street Station Bldg.

*WeldELLS have *everything*

No other fittings for pipe welding combine these eight features. Besides quarter-marks (described here) the features are:

1. **Seamless**—greater strength and uniformity.
2. **Tangents**—keep weld away from zone of highest stress—simplify lining up.
3. **Selective reinforcement**—provides uniform strength.
4. **Permanent and complete identification marking**—saves time and errors in shop and field.
5. **Wall thickness never less than specification minimum** — assures full strength and long life.
6. **Machine tool beveled ends**—provides best welding surface and accurate bevel and land.
7. **The most complete line of Welding Fittings and Forged Steel Flanges in the World**—insures complete and undivided responsibility.

Easy Driving • Elimination of Accidents • Better Work = 50% Less Assembly Cost with Phillips Screws

Assembly jobs that demand extra patience and plenty of time when using slotted screws, can now be handled . . . in a rush . . . by green men . . . who work with Phillips Screws.

Most important — there's no danger of screwdriver slippage. The driver can't slip from the Phillips recess . . . so faster driving methods are practical. Electric and pneumatic power drivers on many jobs where their use had previously been restricted.

Operations are simplified, too. One-hand starting and driving. Perfect control even when the operator is in an awkward position. No chance for crooked screws, split screw heads or other time wasters.

Altogether, you can depend on *twice the assembly production* with Phillips Screws! Remember *that* for today's conditions when you're interested in saving time. Remember it for tomorrow's conditions when you may be *more* interested in saving cost!

Any of the firms listed below can supply further information.

PHILLIPS RECESSED HEAD SCREWS

GIVE YOU 2 for 1 (SPEED AT LOWER COST)

WOOD SCREWS • MACHINE SCREWS • SHEET METAL SCREWS • STOVE BOLTS • SPECIAL THREAD-CUTTING SCREWS • SCREWS WITH LOCK WASHERS

U. S. Patents on Product and Methods Nos. 2,046,343; 2,046,837; 2,046,839; 2,046,840; 2,082,085; 2,084,078; 2,084,079; 2,090,338. Other Domestic and Foreign Patents Allowed and Pending.

American Screw Co., Providence, R. I.
The Bristol Co., Waterbury, Conn.
Central Screw Co., Chicago, Ill.
Chandler Products Corp., Cleveland, Ohio
Continental Screw Co., New Bedford, Mass.
The Corbin Screw Corp., New Britain, Conn.
International Screw Co., Detroit, Mich.
The Lamson & Sessions Co., Cleveland, Ohio
The National Screw & Mfg. Co., Cleveland, Ohio
New England Screw Co., Keene, N. H.
The Charles Parker Co., Meriden, Conn.
Parker-Kalon Corp., New York, N. Y.
Pawtucket Screw Co., Pawtucket, R. I.
Pheoll Manufacturing Co., Chicago, Ill.
Russell, Burdsall & Ward Bolt & Nut Co., Port Chester, N. Y.
Scovill Manufacturing Co., Waterbury, Conn.
Shakeproof Inc., Chicago, Ill.
The Southington Hardware Mfg. Co., Southington, Conn.
Whitney Screw Corp., Nashua, N. H.

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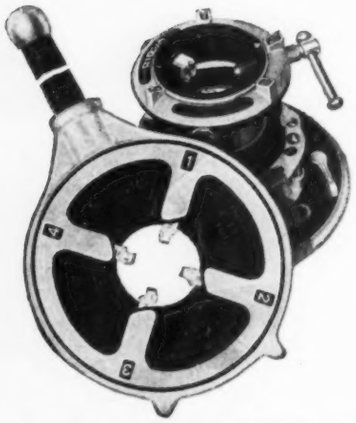
This RIDGID No. 65R Threads 4 Sizes of Pipe With 1 Set of Chasers—Sets to size in 10 Seconds!



One of a Complete Line of RIDGID Pipe Tools, No. 65R-C
Users' Net Price, $17.00

YOU enjoy the same dependable service from this die stock as millions of users get from the RIDGID Wrench—PLUS extraordinary saving of time and effort. A 10-second adjustment sets it to thread 1″, 1¼″, 1½″ or 2″ pipe—1 set of chasers that stay in, no extra sets to lose or waste time. Fool-proof workholder sets instantly. It cuts clean perfect threads *easily*—you can turn it with your little finger. Long-wearing high speed steel chaser dies, powerful all-steel and malleable-alloy construction. Try it at your Supply House.

THE RIDGE TOOL CO., ELYRIA, OHIO

RIDGID saves you all pipe wrench housing repair expense

UNCONDITIONAL GUARANTEE
If this Housing ever Breaks or Distorts we will replace it Free.
COPR. 1937 THE RIDGE TOOL CO. ELYRIA, O.

That guarantee explains why RIDGIDs stay on the job, *in the toughest use*, and save you money. Jaws of chrome molybdenum. Adjusting nut in open housing spins easily in all sizes, 6″ to 60″. Millions in use. Buy from your Supply House.

RIDGID

Pipe Wrenches, Cutters, Threaders, Vises

Work-Saver Tools for America's Big Job in 1942

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100th anniversary

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Walworth manufactured
the *first* American made
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DISTRIBUTORS IN PRINCIPAL
CENTERS THROUGHOUT THE WORLD

"Watchmen"

that Protect Your Defense Assemblies!

THESE QUALITY-CONTROL RECORDS PREVENT "DOUBTFUL" SOCKET SCREWS THAT CAUSE DELAYS AND REJECTS

From careful analysis of the raw material, through every step in production, *each lot* of Parker-Kalon Socket Screws is guarded by these "watchmen" . . . the quality-control records you see here. One reports on the Parker-Kalon Laboratory's analysis of the special alloy steel . . . another is the Lab's point-by-point okay of all physical characteristics of the finished screws. A third record covers an extensive series of critical inspections of dimensions and other details.

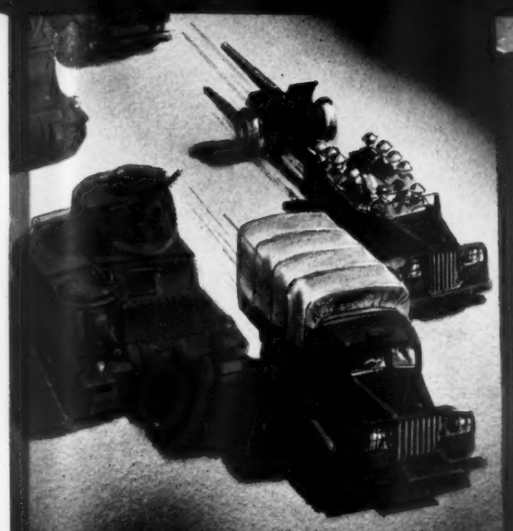
The uniformly high standard of quality which MUST RESULT from such rigid control is ample reason why industry specifies PARKER-KALON for important defense assemblies. Besides, it costs no more to have this protection against "doubtful screws" . . . screws that *look* all right but some of which fail to *work* right. Parker-Kalon Corp., 202-204 Varick Street, New York.

PARKER-KALON
Quality-Controlled
SOCKET SCREWS

Give the Green Light to Defense Assemblies

Quality-Controlled

16-point test and inspection routine covers: Chemical Analysis; Tensile and Torsional Strength; Ductility; Shock Resistance under Tension and Shear; Hardness; Head diameter, height and concentricity; Socket shape, size, depth and centricality; Class 3 Fit Threads; Clean-starting Threads.



TO KEEP DEFENSE PRODUCTION ON THE MOVE

NON-ENGINEERED PRODUCTS *SOLD BY* LYON DISTRIBUTORS

Steel Work Benches for 1, 2 and 3 shift operation

Machine Tool Cabinet

Steel Stools

Assemblers' Bench Bin
(Patent Applied For)

Write for illustrated brochure CRAFTSMEN IN NATIONAL DEFENSE, describing Lyon plants, personnel and facilities available for production-run sub-contracts on sheet metal products or product parts for National Defense.

1. Use LYON Steel Shelving, Tool Cribs, and Shop Boxes...To Conserve Floor Area . . . To Accelerate Handling of Tools and Materials . . . To Make Maximum Use of Minimum Inventory.

2. Use Lyon Manufacturing Facilities to Assure Speedy, Dependable Handling of Sub-Contracts Involving Fabrication of Sheet Metal Units or Parts of Units.

● Most plants handling major National Defense Contracts are familiar with the advantages of Lyon in organizing a plant for more productive storage and material handling.

Now Lyon offers Defense Industries an additional service. If your defense project involves production runs of units or parts of units fabricated from heavy and medium gauge sheet metal, the complete facilities of our two large, modern plants are available on a sub-contract basis.

Lyon has a capable field engineering staff to help you:

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2. Help you take advantage of Lyon's most complete facilities for any sheet metal work in your defense contract.

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Branches and Distributors in All Principal Cities

LYON *Service*

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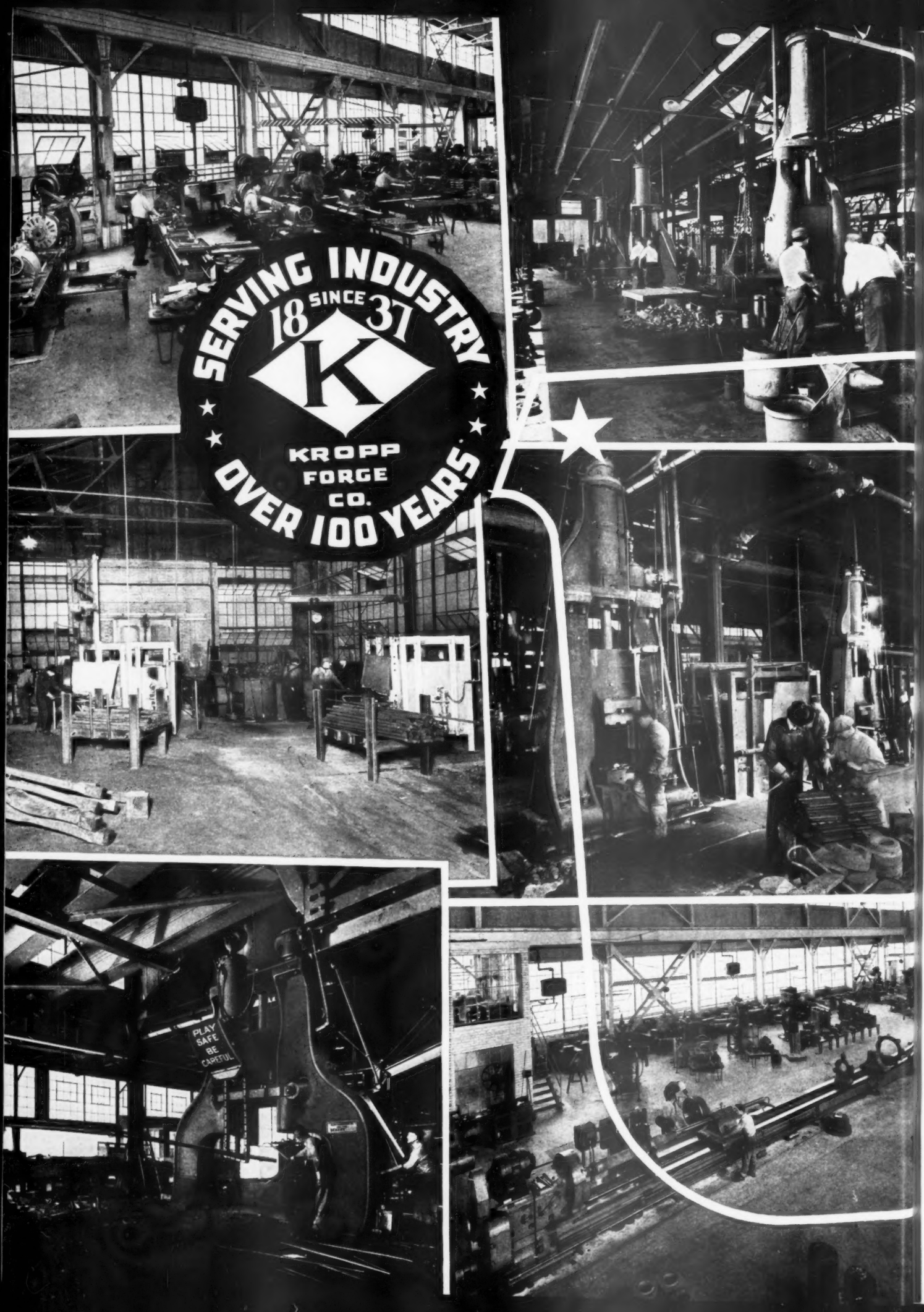
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18 SINCE 31
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KROPP
FORGE
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OVER 100 YEARS
PLAY
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Solving Tomorrow's Worries

In increasing and improving our production facilities for making hammer, drop and upset forgings to fill the needs of today's defense program, we have kept an experienced eye on the future needs of industry. As a result, when today's emergency is over, we will be in a better position than ever before to serve the wants of our many friends in industry with better forgings at lower cost. The equipments, practices and production methods required by the high speed demands of today will go a long way in solving tomorrow's forging worries.

Despite a production increase of over 300%, government requirements still are taking over 96.5% of our output. We are serving you by serving democracy!

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Representatives in Principal Cities

KROPP

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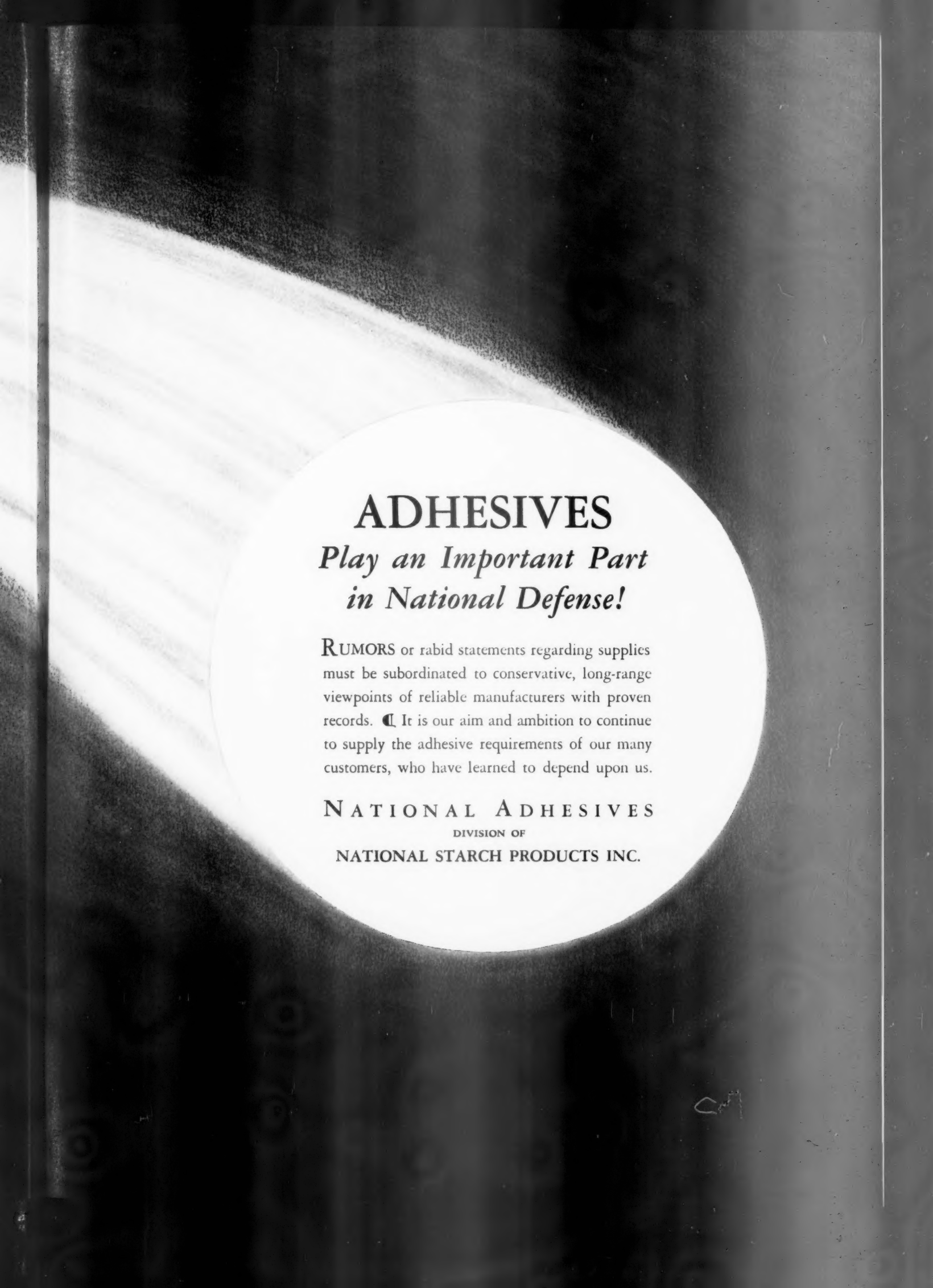
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Play an Important Part
in National Defense!
RUMORS or rabid statements regarding supplies must be subordinated to conservative, long-range viewpoints of reliable manufacturers with proven records. ¶ It is our aim and ambition to continue to supply the adhesive requirements of our many customers, who have learned to depend upon us.
NATIONAL ADHESIVES
DIVISION OF
NATIONAL STARCH PRODUCTS INC.

TRI CLAD moves

REG. U.S. PAT. OFF.

THREE "EXTRA PROTECTION" FEATURES GIVE EVERY TRI CLAD MOTOR GREATER STRENGTH AND LONGER LIFE

1 *Extra Protection* **against physical damage**

2 *Extra Protection* **against electrical breakdown**

3 *Extra Protection* **against operating wear and tear**

ARMORED CONSTRUCTION . . . SMOOTH CONTOURS . . . RIGID ALIGNMENT

Strong, one-piece, cast-iron frame and cast end shields, with upper portion completely enclosed, protect vital motor parts from external blows, falling objects, or dripping liquids. There's less chance of damage in installation, or in operation under "slam-bang" conditions.

"FORMEX" WINDINGS . . . BONDED COIL UNITS

Stator windings of Formex wire give extra protection against moisture oil, abrasion, and heat-shock. New synthetic-resin bonding varnish and Glyptal No. 1201 Red on end-turns add to durability. You can count on uninterrupted performance and long life under strenuous conditions.

NEW BEARING DESIGN . . . ONE-PIECE, DYNAMICALLY BALANCED ROTOR

Sleeve bearings proportioned and grooved for protective lubrication under severe loads. Sleeve and ball bearings enclosed in strong, dust-tight housings. One piece rotor, with fans cast integrally, has new electrical and mechanical features assuring smooth, cool operation and high efficiency.

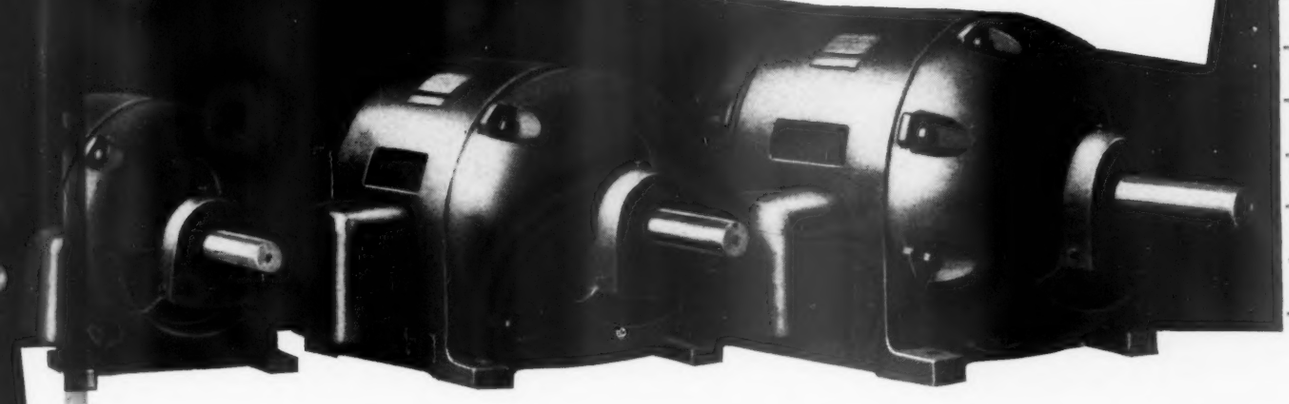
GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y.

BUILT FOR PROTECTION FIRST . . . TO LAST!

up!

NOW . . . . .

TRI CLAD polyphase induction motors are available in integral-hp sizes through . . . . 75 hp



— 75 hp
— 60 hp
— 50 hp
— 40 hp
— 30 hp
— 25 hp
— 20 hp
— 15 hp
— 10 hp
— 7½ hp
— 5 hp
— 3 hp
— 2 hp
— 1½ hp
— 1 hp

. . . a LARGER range of sizes!

. . . a WIDER scope of service!

The advanced design and triple-tough construction that won industry's enthusiastic acceptance almost overnight have now been extended to many larger motors in our a-c line.

General Electric and its employees are proud of the Navy award of Excellence made to its Erie Works for the manufacture of naval ordnance.

GENERAL ELECTRIC

750-104-8068

150 LB. CAST STEEL GLOBE VALVES IN LINE WITH THE GREAT NEED OF *Today!*

Reading-Pratt & Cady Fig. 1511 Cast Carbon Steel Globe Valve with 12-14 Chrome Trim. 230 lbs. at 100°F.—190 lbs. at 300°F.—150 lbs. at 500°F.—100 lbs. at 750°F.

A valve for processing services where temperature, concussion or safety rather than pressure requires the use of cast steel. Heavy body walls. Moving parts quickly renewable at the cost of a minimum of strategically important metals.

Materials are scarce! Conserve them by installing valves which under the gaff of twenty-four-hour operation do not require early replacement and the repeated use of critical materials.

Before buying new valves, take advantage of renewable features. Replace worn parts and continue to use the critical metals in parts still serviceable.

Valves are vital to defense. Our capacity, now fully absorbed by defense work, has been increased and further increase made possible by the recent consolidation of our facilities at Reading, Pa. While scarcity of materials slows the outward flow of production, our position is now very much stronger than it was before the consolidation.

READING—CAST STEEL VALVES AND FITTINGS
PRATT & CADY—BRASS AND IRON VALVES
D'ESTE—VALVE AND ENGINEERING SPECIALTIES

READING-PRATT & CADY
READING, PENNSYLVANIA

A *Division of* AMERICAN CHAIN & CABLE COMPANY, INC. *Bridgeport, Conn.*

When writing Reading-Pratt & Cady please mention Purchasing

Scully Service

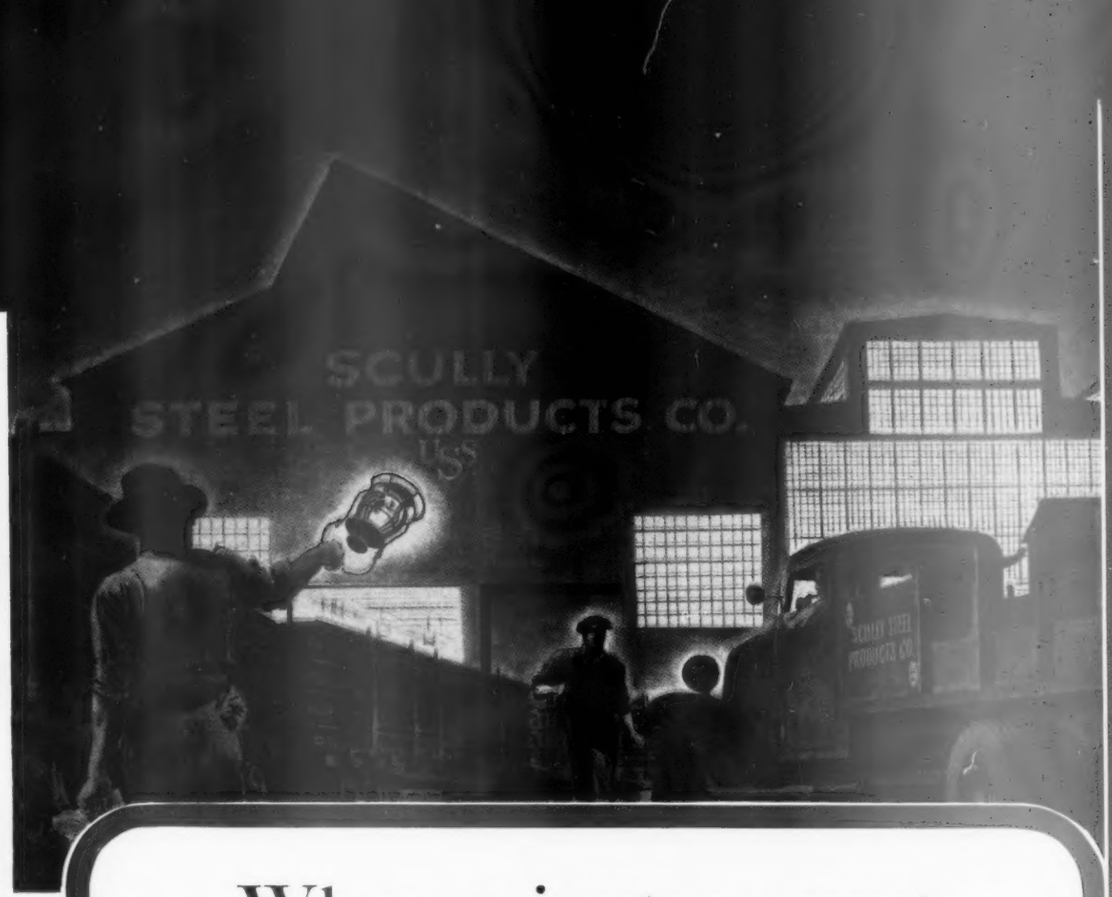
"We express our sincere appreciation of the splendid manner in which you have taken care of our needs, especially so during the last hectic months."

"We want you to know that we appreciate not only the prompt shipment, but also the painstaking care with which you handled the transaction."

"In case an emergency of a similar nature again arises, it is a pleasure to know that we can depend upon cooperation of this kind."

STEELS THAT MEET THE CHALLENGE OF TODAY AND TOMORROW

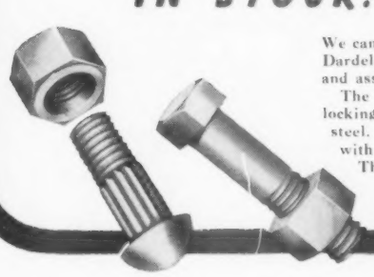
USS



When minutes count ...it pays to call Scully!

Structural material
Plates, various qualities
Floor Plates
Sheets: Hot Rolled, Cold Rolled, Galvanized, etc.
Bars (all shapes): Hot Rolled, Carbon and Alloy grades
Hot Rolled Strip Steel
Spring Steel · Tool Steel
Drill Rod
Cold Finished Bars, Carbon and Alloy grades
Wire
Cor-Ten and Man-Ten Shapes, Sheets and Plates
Abrasion-Resisting Sheets and Plates
Eaves Trough, Conductor Pipe
U·S·S Stainless Steel and Stainless products
Expanded Metal
Rails
Boiler Tubes
Rivets, Bolts, Nuts, Washers
Dardelet Rivet and Machine Bolts
Nails
Welders and Welding Accessories
Chain
Clamps
Flanges
Expanders, etc.
Hoists, Shears, Rolls, Punches, Cut-Off Machines, Saws, Nibblers, etc.

IN STOCK! DARDELET BOLTS



We can offer immediate shipment of both Dardelet Rivet Bolts and Dardelet Machine Bolts. These bolts save valuable time and labor and assure permanently tight bolts.

The Dardelet Rivet Bolt is a ribbed bolt with Dardelet self-locking thread, and is widely used for field erection of structural steel. Has recessed nut. Bolt is driven in and nut is applied with wrench. Economical and strong.

The Machine Bolt with Dardelet self-locking thread is for general use where vibration is present.

SCULLY STEEL PRODUCTS COMPANY

Distributors of Steel and Steel Products

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UNITED STATES STEEL

SAVED!

by an extra margin of SAFETY

MANY a worker in plants where dangerous chemicals are used owes his life to a handy emergency shower—an *extra* margin of safety that becomes increasingly important as the defense speed-up increases industrial hazards.

And many an important shipment owes its safe arrival to the above-specification protection provided in Gaylord Boxes by the famed Gaylord "Extra Margin of Safety"—more often than ever now that our quickening industrial pace has also increased shipping hazards!

GAYLORD CONTAINER CORPORATION

General Offices: SAINT LOUIS

New York • Chicago • San Francisco • Atlanta • New Orleans • Jersey City • Seattle • Indianapolis • Houston
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CORRUGATED AND SOLID FIBRE

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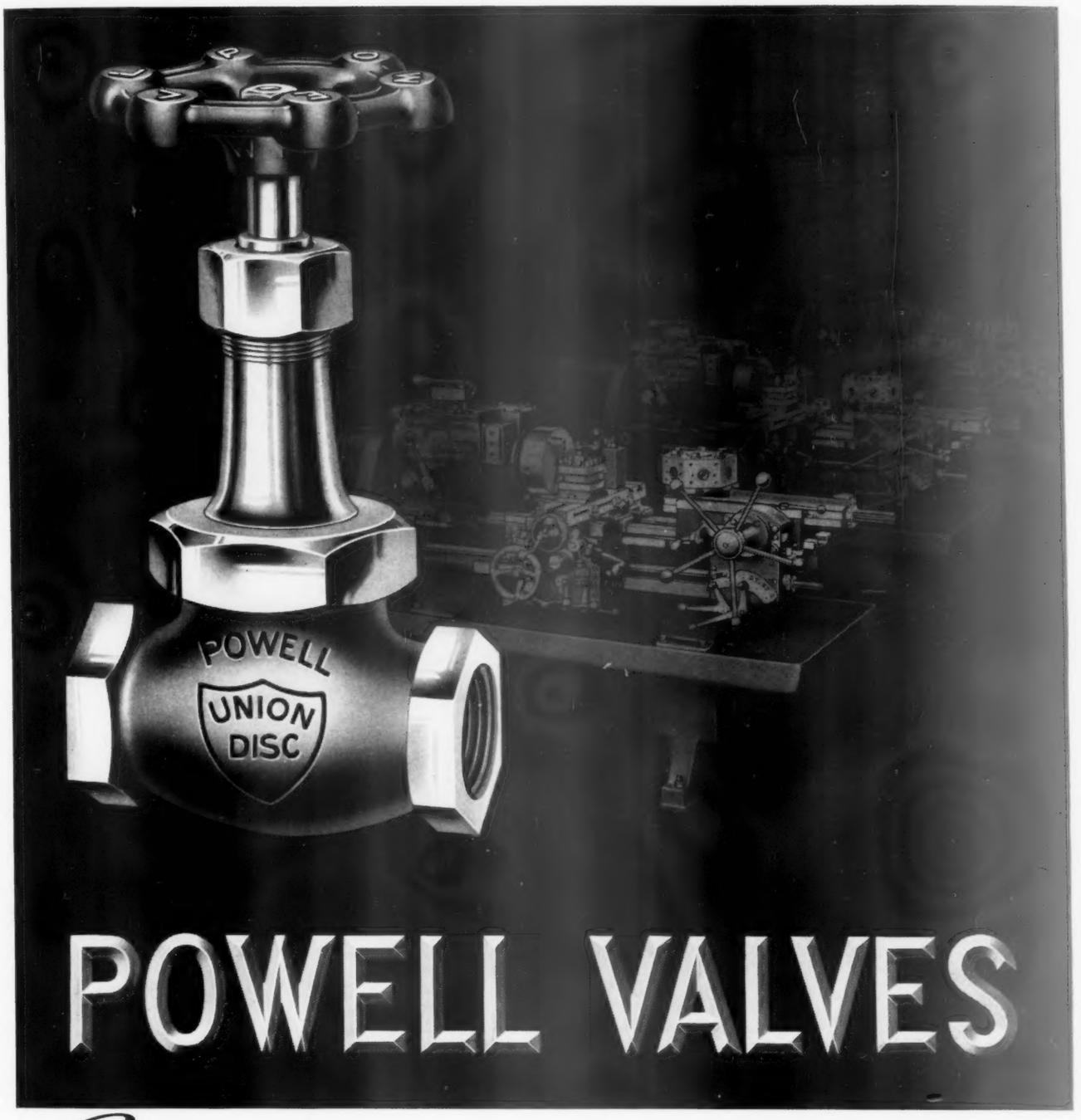


Service . . .

Advanced engineering conducted by highly trained specialists using the most modern laboratory equipment. Quantity production on a vast array of up-to-the-minute machines. The readiness and ability of the Powell technicians to lend their experience and skill to the solution of each and every valve problem which is imposed by the constant changes in the present industrial picture.

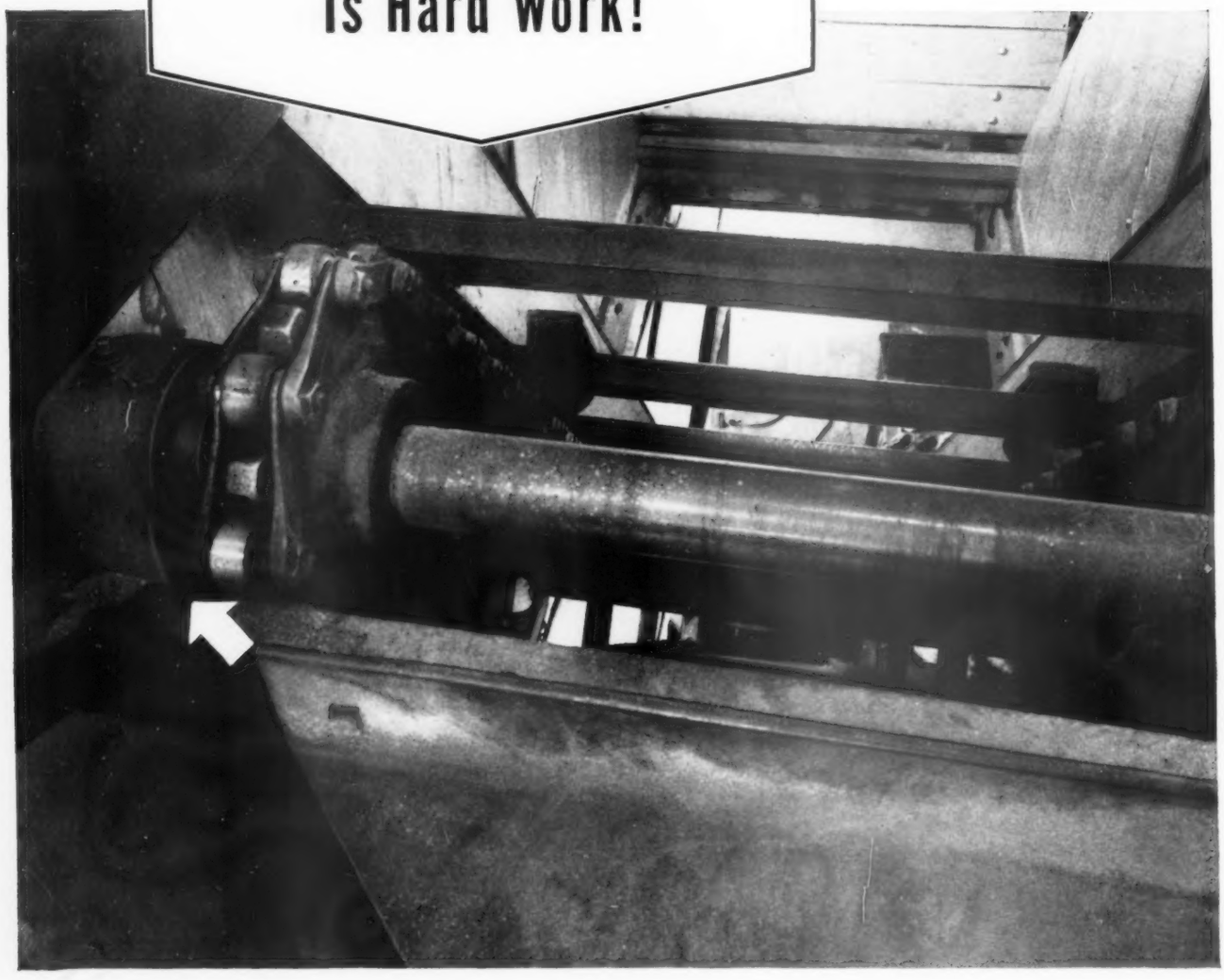
These are the things that habitual users of Powell Valves become accustomed to. The result of them, as expressed in terms of valves, is sturdiness, efficiency and economy. This, to the people at the Powell plant, is the meaning of service.

The valve shown here is a 150-pound bronze Globe Valve regularly equipped with renewable vulcanized composition discs for saturated steam service. Valves with special discs for hot or cold water, oil, gas and high pressure steam can also be supplied.

The Wm. Powell Company
Cincinnati, Ohio

When writing The Wm. Powell Company please mention Purchasing

Where "WOOL GATHERING" is Hard Work!



"Wool Gathering" may be an easy life for a person . . . but not for these two Fafnir Ball Bearing Pillow Blocks. In a wool sorting plant they carry the load of a *five-story* roller-chain conveyor.

The drag of this roller-chain monster alone killed plain bearings very quickly. But, the Fafnirs – two SA Pillow Blocks of $2^{15}/_{16}$" bore diameter supporting the shaft at the head end of the conveyor – carry this load *plus* the dead weight of the raw wool, from the bottom floor to the top, effortlessly, day in and day out! They've been on the job for four years, with only occasional lubrication!

If you're operating machinery where friction can steal power and production time – you can outlaw it with Fafnirs designed for the job! No other ball bearing units make this turning point to economy so easy to attain. Fafnirs alone offer the long-life Balanced Design – deeper races, larger balls. The complete Fafnir line includes every type and size of radial and thrust bearing, precision bearing, self-aligning bearing, sealed bearing and housed transmission unit. They're *made* for industry's big job today! Distributor stocks in principal cities. The Fafnir Bearing Company, New Britain, Conn.

FAFNIR
Ball Bearings
THE BALANCED LINE –
MOST COMPLETE IN AMERICA

When writing The Fafnir Bearing Company please mention Purchasing

Can You Use a Material with THESE *Characteristics?*

Here is a list of useful qualities all of which are found in combination in Formica:

- Low Moisture Absorption
- Low coefficient of thermal Expansion
- Stability of dimensions under a wide range of conditions
- High mechanical strength
- Chemical inertness—no corrosion
- Non-Porous—non-absorbent
- High dielectric strength
- High insulation resistance
- Low Power factor
- Low hysteresis losses
- Minimum cold flow
- Easily Machinable
- Can be molded in simple forms
- Half the Weight of Aluminum

THAT is an impressive list to be found in one material. Formica has them all and the great and steady increase in the use of the material is based on them. Hundreds of industries have found a use for the material.

Formica is made in three fundamental forms: Sheets, Tubes and Rods from which a great variety of parts can be machined. It is also more and more being molded in simple forms. Send your blue prints for an opinion as to whether the material will serve your purposes

This shows how Formica is built up of laminations of cloth or fibre impregnated with phenolic resins and cured under heat and pressure.

The Formica Insulation Company
4640 Spring Grove Ave., Cincinnati, Ohio

FORMICA

Engineered Specialties

FORMICA maintains a large engineering and research organization and has built its business to a considerable degree on special products into which much engineering has entered. It is always searching for new products of this type. Formica engineers will be glad to advise on your problems. Write direct to the factory.

When writing The Formica Insulation Company please mention Purchasing

M.P.A.

YOU'VE GOT A BIG JOB HELPING MAKE AMERICA STRONG

Let Us Help You Do It

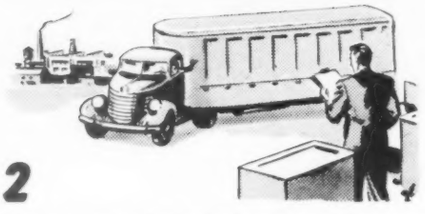
Distributors of Graton & Knight Leather Products offer you SEVEN SERVICES to help overcome problems of material shortage, delayed deliveries, and rising costs.

The following recommendations for improving production have been made by defense authorities. Graton & Knight Distributors can be of practical help to you in carrying out these suggestions.

1

You can save office detail if you bulk many of your orders and place them through us.

On items like leather belting, belt fasteners, fittings, portable tools, bearings, etc. — you can save time, paper-work and worry (and often get immediate delivery) by ordering from your distributor.



2

Buy from your distributor to get the delivery you want. We know several sources.

Not only other suppliers with whom we may have connections . . . but also plants owning but not operating equipment you need. Don't resign yourself to a long wait until you're sure we, too, can't locate it in a hurry.

4

Keep equipment in best condition by improved maintenance methods. We can suggest them.

Tool life, for example, may be lengthened by hard-surfacing, oilstoning, proper cooling and holding; leather belt efficiency and life increased by regular dressing. We can furnish materials for proper maintenance.

5

Step up production through use of best quality supplies. We carry them for you.

Use proper grades of lubricating oils, select most efficient bearings to get top production. Also, use Research Leather Belting which is guaranteed to give you 3% more production.

6

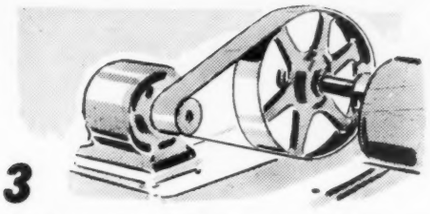
Use standard equipment to save costs and delivery time. Let us suggest where to eliminate specials.

We can show you where slight specification changes may bring delivery dates much closer. Use of leather belting and standard flat-face pulleys avoids long waits for special hard-to-get sheaves and rubber V belts.

GRATON & KNIGHT COMPANY

WORCESTER, MASSACHUSETTS

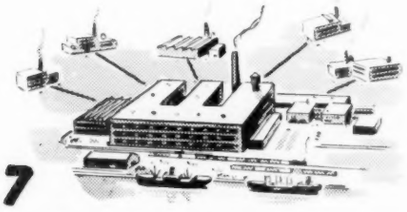
Only leather belting manufacturer with complete nationwide service facilities



3

Get increased production by modernizing your old equipment. We can show you how to do it.

Retired machines often can be refitted to approach new-machinery performance. For example, efficient short-center flat belt drives will step up production. Used leather belting also can be rebuilt at small cost.



7

If you have big defense orders, parcel out some of the work. We can tell you where.

Our knowledge of productive capabilities of other firms in your vicinity is a valuable guide in placing sub-contracts. Many non-defense plants undoubtedly have machinery and men to turn out work you need.

Flat Leather Belting
Round-Leather Belting
Flat Leather Link Belting
Leather V Belting
Belt Dressings
Belt Cements
Lace Leather
Leather Packings
Textile Leathers

These Graton & Knight Distributors can help you contribute maximum production for defense. Call upon them.

ALABAMA
Birmingham — The Young & Vann Supply Co.
Mobile — McGowin-Lyons Hdwe. & Supply Co.

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Kingman — Tarr, McComb & Ware Commercial Company
Phoenix — Pratt-Gilbert Hardware Company
Tucson — Albert Steinfeld & Company, Inc.

ARKANSAS
Helena — Lewis Supply Co.
Pine Bluff — Arkansas Mill Supply Co., Inc.
Texarkana — Buhrmann-Pharr Hardware Company

CALIFORNIA
El Centro — Imperial Hardware Co.
Los Angeles — Frey Industrial Supply Co.
Oakland — Bay City Iron Works
San Francisco — Honolulu Iron Works Co.

CONNECTICUT
Bridgeport — Hunter & Havens, Inc.
New Haven — The Page, Steele & Flagg Company
Plainville — Ideal Machinery Co.
Stamford — The Geo. W. Southwick Co.
Waterbury — The White Supply Co.

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Jacksonville — The Cameron & Barkley Co.
Miami — The Cameron & Barkley Co.
Tampa — The Cameron & Barkley Co.

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Columbus — Columbus Iron Works Co.
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Quincy — E. Best Plbg. & Htg. Supply Co.

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Cincinnati — The Scallan Supply Co.
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Newport News — Noland Company, Inc.
Norfolk — Taylor-Parker Company, Inc.
Richmond — Smith-Courtney Company
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WASHINGTON
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Seattle — Chas. H. Harden Co.
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. . . AND KEEP 'EM TURNING!

Hour after hour, shift after shift, 24 hours a day — quality tools prove their worth at the work-heads by keeping vital defense production on the move.

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IT'S GOING TO TAKE METTLE

CURRENT efforts of brain and brawn, man and machine will determine how far today's concerns will go *tomorrow*. To manufacturers now "on their mettle" to meet the challenge of future merchandising needs, Hinde & Dauch offers the facilities of the Package Laboratory. Just as H & D's 25 mills and factories are now working full time to produce shipping boxes for hundreds of items, from shells to shoes, H & D's Package Engineers are ready to "deliver" for manufacturers seeking authoritative packaging recommendations and services.

These services include the study of your product, your market, your complete packaging program; the development of corrugated packages to meet the situation squarely; the preparation of packages which are more simple, more economical, more effective . . . depending upon your objective. H & D can perfect the packages you need to complete tomorrow's merchandising program so that it can be "stored" as a unit, ready to roll when business gets the signal to go ahead. Write us today. There's no obligation.

New standards of simplicity, effectiveness, economy, practicality are continually being established as H & D Package Engineers work full time on corrugated package development. Perhaps the adaptation of one or more of these corrugated achievements will save you dollars today, as well as precious time tomorrow.

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Ready Now! TO HELP YOU AVOID PLANT INTERRUPTIONS . . .

CRANE SHOP BULLETIN NO. 4
TIPS ON VALVE TRIM
TO HELP KEEP PIPING ON THE JOB
PLEASE CHECK AND PASS ON
POST ON SHOP BULLETIN BOARD
IT'S THE TRIM THAT COUNTS!
DISC
STEM
BODY SEAT RINGS
AN AID TO DEFENSE . . . No. 4 of a series of Shop Bulletins on how to get better service from piping equipment in today's emergency. Issued for maintenance men by Crane Co., distributed free by Crane Representatives.
HELPFUL HINTS ON CHOOSING VALVES FOR BETTER PIPING SERVICE
INTERRUPTION!

UNDER war time production burdens, the danger of piping failures is greatly increased. One way to stop them is by making sure valves are trimmed right for the service they're in. Crane Shop Bulletin No. 4, with its handy guide, shows the right trim for most valve applications in your plant.

Crane Shop Bulletins are aimed to give you better service from piping equipment now when replacements aren't so plentiful. Designed for your maintenance crews—they help train new men, also keep veterans "brushed-up" on good piping practice.

Plants everywhere use these Bulletins in shops and employee training schools. In the hands of your men, they'll also help stop piping troubles and production line shutdowns.

Offered free to aid Defense, this timely Shop Bulletin Service may be had through your local Crane Representative. Call him today!

CRANE

CRANE CO., GENERAL OFFICES:
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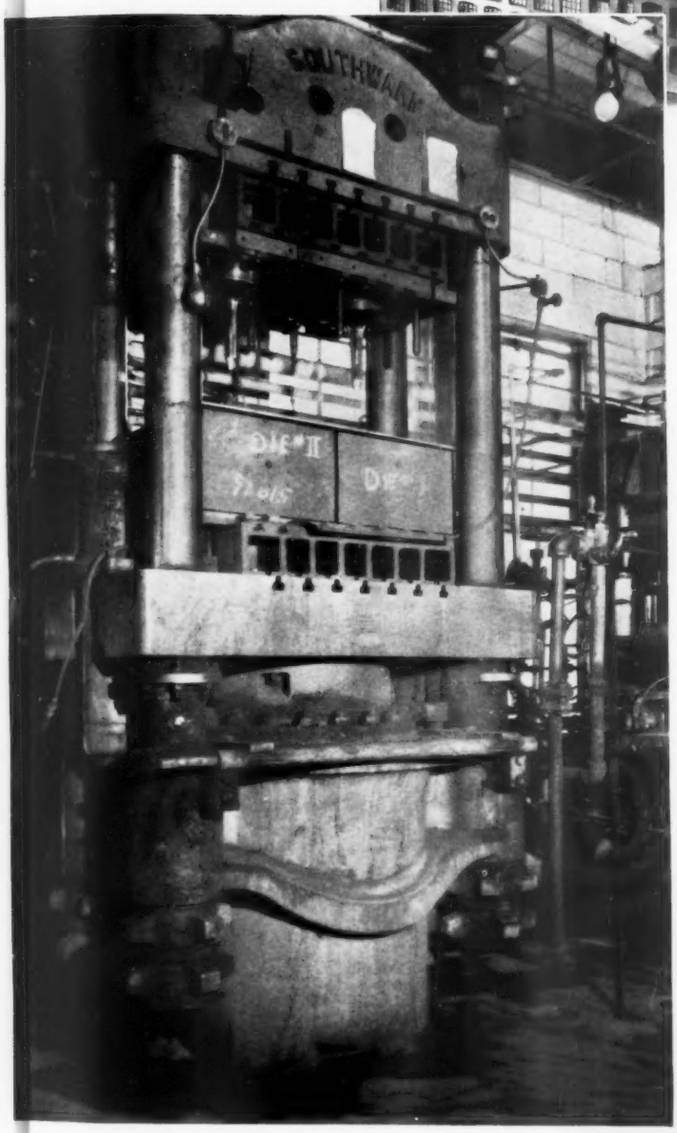
212,000 Sq. Ft. of Floor Space



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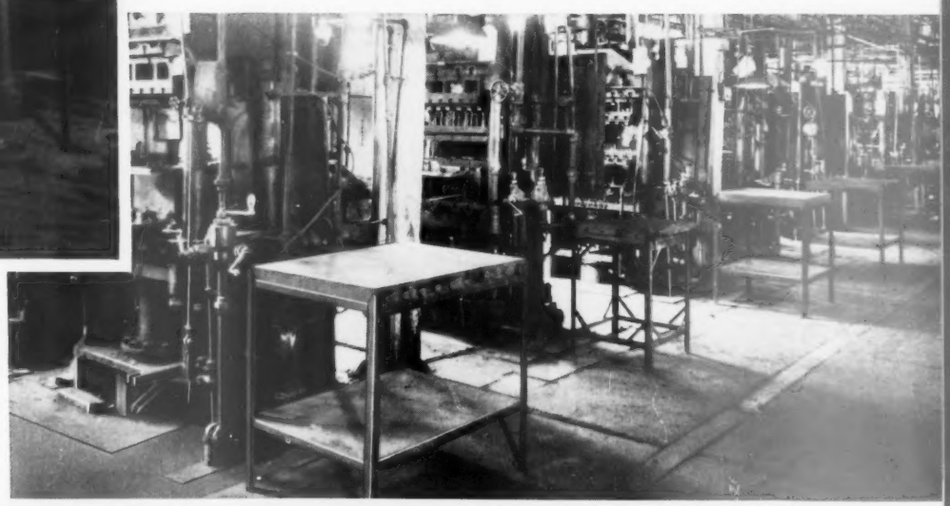
We have the plant, 212,000 square feet of capacity, enabling us to handle the largest quantities with ease.

We have the machines, modern and highly efficient, to turn out articles of any shape and any size, even the largest. All operations, including making the molds, are done in our own plant.

We have the men, engineers and workmen, long skilled in producing molded plastics parts of all kinds and descriptions.

We have the experience in producing molded plastics parts, often in immense quantities, for manufacturers of America's best known automobiles, electric appliances, motors, radios, phonographs and other products where the highest degrees of accuracy, finish and appearance are primary requisites.



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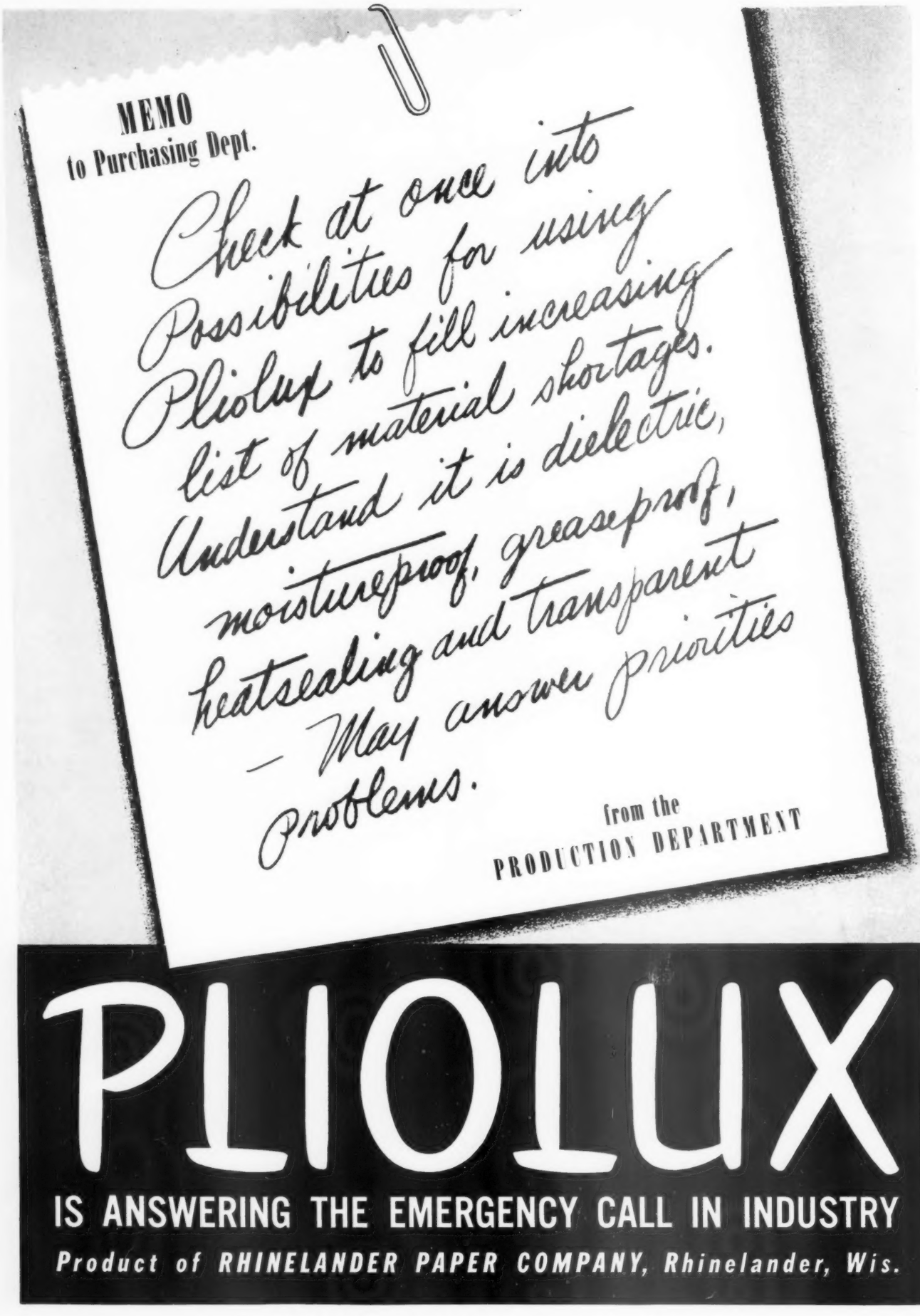
The GENERAL INDUSTRIES Co.

MOLDED PLASTICS DIVISION . . . ELYRIA, OHIO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to Purchasing Dept.
Check at once into Possibilities for using Pliolux to fill increasing list of material shortages. Understand it is dielectric, moistureproof, greaseproof, heatsealing and transparent — May answer priorities problems.
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Product of RHINELANDER PAPER COMPANY, Rhinelander, Wis.

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PURCHASING PREVIEWS

From the Washington office of

PURCHASING

National Press Building
Washington, D. C.

January 5, 1942

For Purchasing Executives:

VICTORY PROGRAM—The immediate effect of the transition from a state of defense to a state of war is an enormous increase in the Government's purchasing program for arms and supplies to support our forces in the field, on the seas, and in the air, without diminishing in any way our material aid to the anti-Axis powers.

Prior to December 9th, the Defense Program represented appropriations of 67 billion dollars. About 13 billions were spent in 1941, and by the end of the year expenditures had attained a rate of slightly less than two billion dollars a month. Although every effort was being made to accelerate production so as to raise this figure, general progress was considered satisfactory and according to schedule. The ultimate objective of procuring 3 to 3½ billion dollars' worth of war materials per month was to have been reached early in 1943.

The Victory Program outlined by SPAB, replacing the defense Program, contemplates a minimum total expenditure of 150 billions, or more than double the Defense total. This will not be handled as a bulk appropriation, but a series of very substantial requests from Congress may be expected in rapid succession as the plans take more definite and detailed form.

Even more important to business is the time schedule. The program aims at an immediate speed-up of Victory production to a rate of four billion dollars a month during the present year. In other words, instead of planning an increase of 50% over present rates by 1943, the new schedule plans an increase of 100% in 1942. The estimated totals for the next two years are 40 billions in 1942 and close to 60 billions in 1943.

* * * *

MORE SHORTAGES—In the all-out war effort, the demands of the Victory Program are keyed closely to the practical maximum ability of our nation's industrial and economics capacity to absorb them. It differs from the Defense schedule in that it can not wait on the development of additional producing, processing and fabricating facilities. The increases in production must come from existing facilities. This means that they will come, in most cases, directly at the expense of non-essential civilian production, which has already been sharply curtailed.

New facilities now coming into production are well discounted in these estimates. During the closing months of 1941, there had been a tendency toward levelling off in the supply-demand ratio on some materials which had been exceedingly tight in earlier months, giving promise of a more stable situation if not actually easing the purchasing problem. That outlook is now pushed definitely at least two years into the future.

There will be more shortages of materials for the manufacturer, in relation to demand, and very definite shortages for the consumer.

* * * *

MORE CONTROLS—The problem of shortages inevitably calls for more Governmental regulation in the form of use limitations and allocation, to direct available supplies into essential Victory channels. The form of control will follow the general pattern already established through the Priorities Division, but with greater use of the more drastic powers vested in the Governmental agencies.

There will also be a more ruthless attitude toward industries which are non-essential to the Victory effort, less consideration for civilian convenience when that happens to conflict with military necessity, and less of an attempt to avoid disturbance to present situations. That is unfortunate but unavoidable. It is based on the sound premise that since the main issue is now clearly defined, this is everybody's war. An internal reorganization of OPM in late December stresses the conversion of all possible plants to Victory production.

* * * *

INFLATIONARY TRENDS—The bulk of new controls to date are coming from the Office of Price Administration, for shortages breed speculation and price structures that have little relation to costs or intrinsic values. OPA has been prompt to forestall such inflationary practices wherever the danger signals are noted. But OPA is more than ever convinced that such piecemeal regulation is not sufficient to stem the tide.

Pending price legislation is more concerned with administrative detail than with economic arithmetic. Considerations of agricultural parity and reluctance to touch wages will sanction a moderately rising trend, but will check runaway markets.

One of the chief concerns of Congress is to maintain the values of Defense bonds, which would be seriously impaired by inflation. With the great responsibility of financing the war, Congress has no desire to lessen public confidence in Defense bonds as a sound investment.

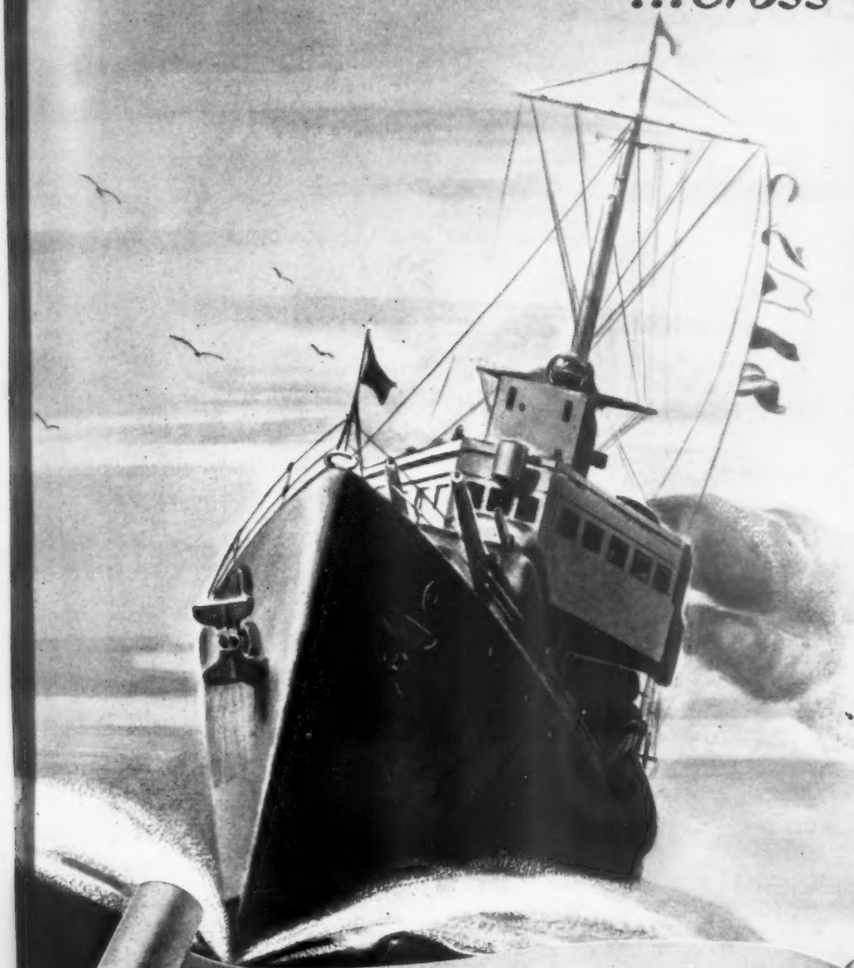
* * * *

ONE-MAN CONTROL—There is an increasing sentiment within OPM that one-man control is the only way to reconcile conflicting interests in the administration of the materials organization and to expedite the program. But this will not be an immediate step. On the other hand, there is much sentiment in opposition to one-man control in respect to prices, based largely on the personality and views of Mr. Henderson, yet it is likely such control will be granted.

—THE EDITORS

PROTECTION IN TRANSIT

...'Cross Ocean or 'Cross Town



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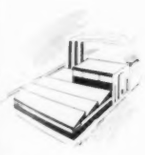
FIBREEN is a product of The Sisalkraft Co.—also manufacturers of Sisalkraft, Sisal-X, Sisal-Tape and Copper-Armored Sisalkraft.



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If you've been wondering: "Do I have to go to Washington to find out this or that about war-time production or priorities?" — here's a chart that may save your time.

Cities marked (1) have local offices of the Contract Distribution Division of the OPM, the branch charged with spreading defense work by means of contracts and subcontracts to smaller manufacturers.

Cities marked (2) have local offices of the Priorities Field Service of the Priorities Division of OPM. Their job is to assist in the field of priority ratings and allocations.

Cities marked (3) have local offices of the Training Within Industry Branch of the Labor Division, OPM . . . established to assist defense contractors with the problems of training the worker.

Week by week, as part of a decentralization program now under way, new local offices of these and other OPM divisions are being opened. In all of the cities marked with a "▭" there's an easy way to find out the address of the nearest OPM office that handles your particular problem: That is by calling the local GRAYBAR office.

GRAYBAR long ago recognized the need for decentralized, local service. In each of the 87 "tagged" communities, GRAYBAR Representatives are intimately concerned with what's going on industrially. We count it part of our job, as a distributor in tune with the times, to try to supply you with *governmental* as well as *technical* information that will assist you in getting prompt delivery of the electrical supplies needed for national defense.

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- ▭ Baltimore (1) (2) (3)
- ▭ Beaumont
- ▭ Birmingham (1) (2)
- Bismarck (1)
- Boise (1)
- ▭ Boston (1) (2) (3)
- Bridgeport (1)
- ▭ Buffalo (1) (2) (3)
- ▭ Butte • Casper (1)
- ▭ Charlotte (1) (2)
- ▭ Chattanooga (1)
- ▭ Chicago (1) (2) (3)
- ▭ Cincinnati (1) (2) (3)
- ▭ Cleveland (1) (2) (3)
- ▭ Columbia, S. C. (1)
- ▭ Columbus (1)
- ▭ Corpus Christi
- ▭ Dallas (1) (2)
- ▭ Davenport
- ▭ Dayton (1) (2)
- ▭ Denver (1) (2) (3)
- ▭ Des Moines (1)
- ▭ Detroit (1) (2) (3)
- ▭ Duluth • ▭ Durham
- Eau Claire (1)
- El Paso (1) (2)
- Erie (1)
- Evansville (1)
- Fall River (1)
- ▭ Flint
- ▭ Fort Worth
- ▭ Fresno
- ▭ Grand Rapids
- ▭ Hammond
- ▭ Harrisburg (1)
- ▭ Hartford (1) (2)
- Helena (1) (2)
- ▭ Houston (1) (2) (3)
- Huntington (1)
- ▭ Indianapolis (1) (2) (3)
- Jackson (1)
- ▭ Jacksonville (1) (2)
- Johnstown (1)
- ▭ Kansas City (1) (2)
- ▭ Knoxville (1) (2)
- Lancaster (1)
- ▭ Lansing
- Little Rock (1) (2)
- ▭ Los Angeles (1) (2) (3)
- ▭ Louisville (1) (2)
- Lowell (1)
- Manchester (1)
- ▭ Memphis (1) (2)
- ▭ Miami (1)
- ▭ Milwaukee (1) (2)
- ▭ Minneapolis (1) (2) (3)
- Montpelier (1)
- ▭ Nashville (1) (2)
- ▭ Newark (1) (3)
- ▭ New Haven (3)
- ▭ New Orleans (1) (2)
- ▭ New York (1) (2) (3)
- ▭ Norfolk
- Norristown (1)
- ▭ Oakland
- ▭ Oklahoma City (1) (2)
- ▭ Omaha (1) (2)
- ▭ Orlando
- ▭ Peoria
- ▭ Philadelphia (1) (2) (3)
- ▭ Phoenix (1) (2)
- ▭ Pittsburgh (1) (2) (3)
- ▭ Portland, Me. (1)
- ▭ Portland, Ore. (1) (2)
- ▭ Providence (1)
- Raleigh (1) (3)
- ▭ Reading (1)
- Reno (1)
- ▭ Richmond (1) (2)
- ▭ Roanoke
- ▭ Rochester (1)
- ▭ Sacramento
- ▭ St. Louis (1) (2) (3)
- ▭ St. Paul
- ▭ Salt Lake City (1) (2)
- ▭ San Antonio (1) (2)
- ▭ San Diego
- ▭ San Francisco (1) (2) (3)
- ▭ Savannah (1)
- Scranton (1)
- ▭ Seattle (1) (2) (3)
- Shreveport (1)
- Sioux Falls (1)
- ▭ Spokane (1)
- Springfield, Ill. (1)
- ▭ Springfield, Mass. (1)
- ▭ Syracuse (1)
- ▭ Tacoma • ▭ Tampa (2)
- ▭ Toledo (1) • Trenton (1)
- Tulsa (2)
- ▭ Washington (1) (2) (3)
- Wheeling (1)
- ▭ Wichita (1)
- Wilkes-Barre (1)
- Williamsport (1)
- Wilmington (1)
- ▭ Winston-Salem
- ▭ Worcester (1)
- York (1)
- ▭ Youngstown (1)

PURCHASING

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THE PURCHASING JOB IN WARTIME

Wartime conditions have placed new emphasis on the procurement function. That development has been apparent ever since we entered upon the defense effort more than a year ago. Government regulations over materials and their flow into consuming channels, and the problems incident to buying and follow-up alone have added much to the purchaser's responsibility.

But buying is only one phase of the procurement job. In the new economy, there are dozens of ways in which the purchasing department can be a constructive force in management, and for which it is in a particularly favorable position because of its relation to other departments, to governmental agencies, and to outside suppliers. Consider just a few:

Purchasing is the logical place in the organization to keep abreast of all government orders—an information source for management and for all departments.

Interviews with suppliers' sales and service calls, intelligently and promptly handled in the purchasing department, can save valuable production time for technical and operating executives. The well informed buyer, thoroughly in touch with his company's requirements, can prove the logic and value of having one point of contact with the supplier—in the purchasing department.

Inventory policies must be judged in a new light. Speculation and hoarding are out. Balance is extremely important, and quantities as low as possible to maintain continuous operation while releasing needed materials for other similarly important uses. Purchase scheduling may give the answer; and keeping records so as to get full benefit from priority privileges on maintenance and operating supplies.

Conservation and salvage rate high as factors in the company and the national interest. Instead of a piecemeal program by department heads, coordinate this effort through purchasing, the clearing house for all materials used throughout the company.

Substitution of materials is no longer a matter of design and operating considerations. Availability is the first criterion, and that is in the sphere of purchasing.

These are but a few of the suggestions which come instantly to mind The time has come for a complete reappraisal of the purchasing job in the light of 1942 responsibilities. And the place for appraisal, too, is in the purchasing department. Management's appraisal will cheerfully follow a constructive program of service and accomplishment.

Stuart F. Heinritz

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Strip Steel, Flat Wire, etc.
Stainless Steel
Mechanical Tubing
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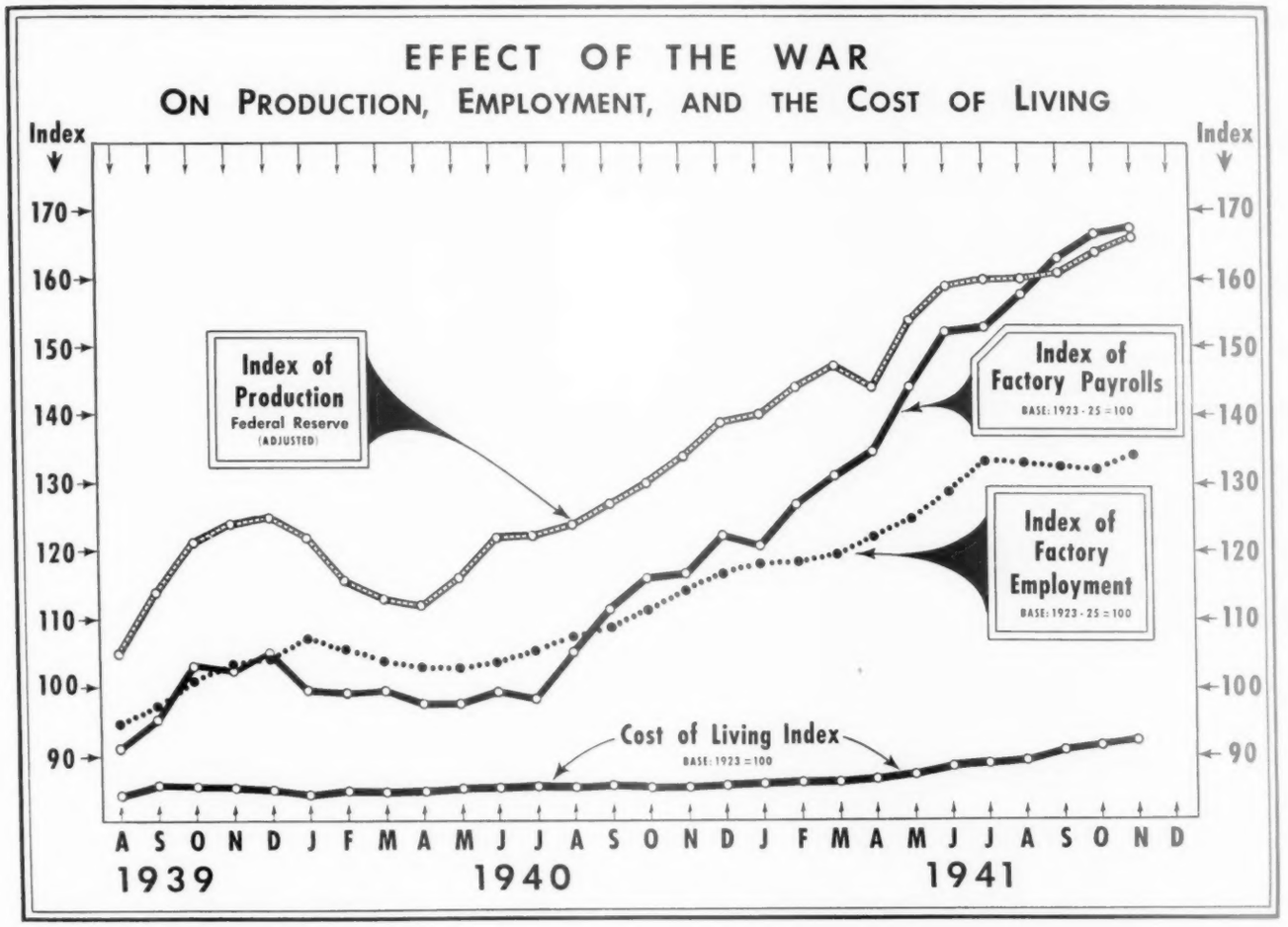
WARTIME TRENDS
In Economics and Prices

By H. N. McGILL
McGill Commodity Service

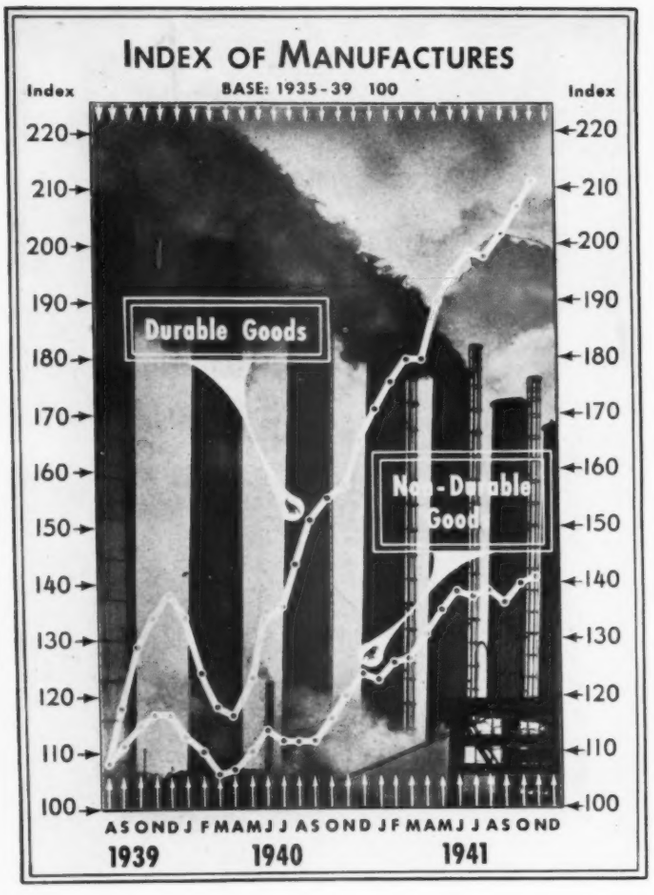


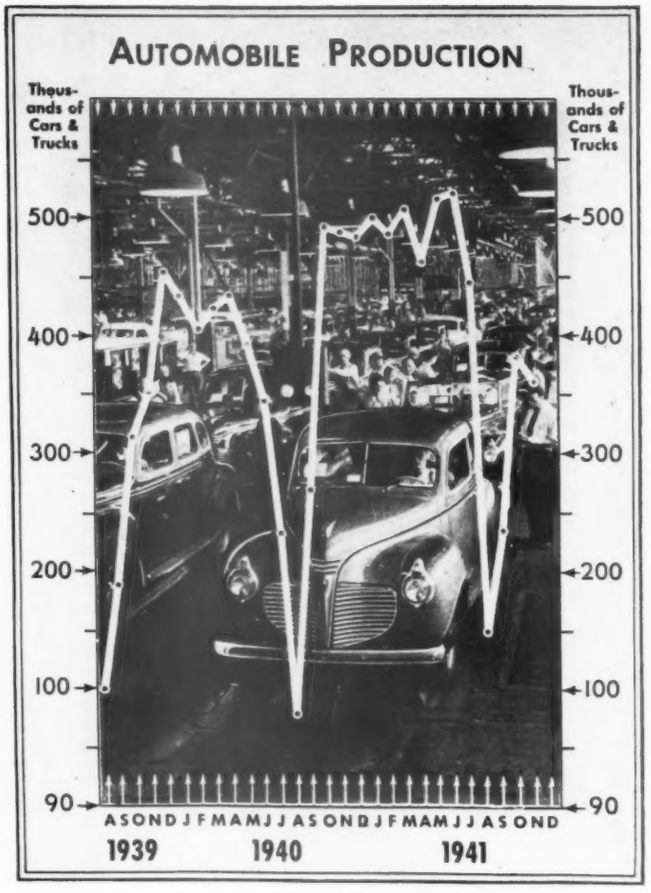
THAT the vicious cycle of rising prices, wage rates, producing costs, etc., has rotated at full speed during the past year is clearly illustrated in the accompanying graph. Now the cost of living is beginning to respond, and it is quite apparent that living costs during the coming year will increase more than the complete advance since the outbreak of the war. The war will do much to bring clarity out of chaos in the relationship between SPAB, OPM, and OPA. One thing is certain, namely, that within the next month there will be a complete shift from a semi-war to a full-war economy. War production for 1941 did not run much more than sixteen billion dollars, but this year the defense program will cost at least forty billion.

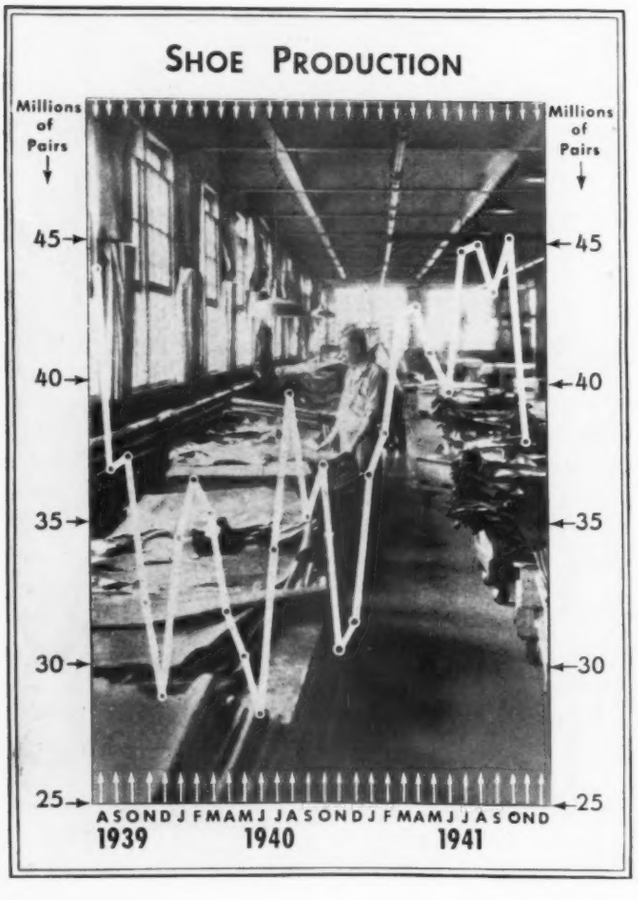
The government has been anxious to avoid placing any handicaps or hardships on individual industries. Now there is no alternative. Many plants must close due to the lack of materials, particularly metals and chemicals. This means a definite increase in local unemployment, but it should prove temporary as there will be plenty of jobs in defense lines as the new year progresses. The curtain is slowly dropping on an adequate supply of civilian goods, and it is quite apparent that last Christmas marked the peak of plenty.

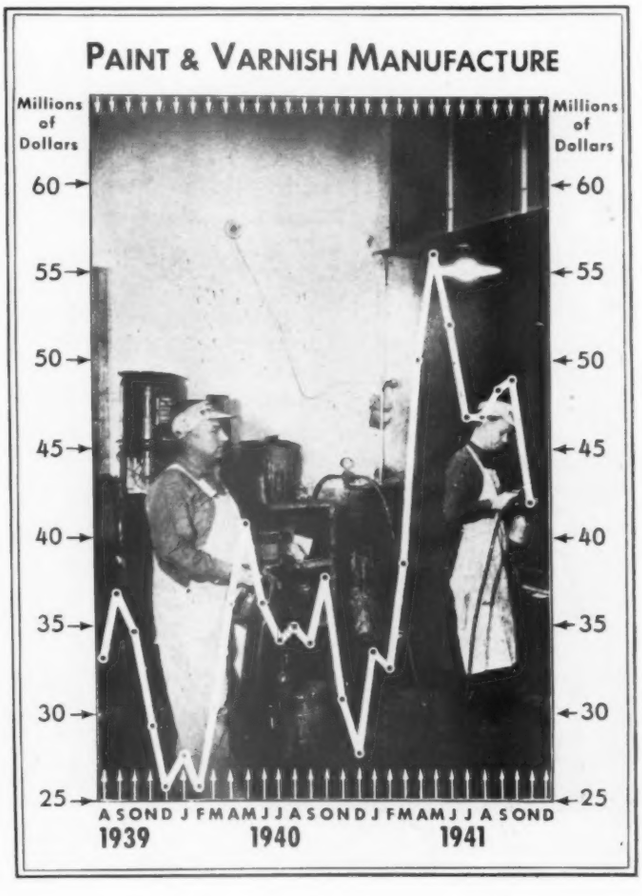
These are serious days, and for the duration of the war we must unite in the effort to achieve a victory. The old economic order is now completely "out the window." The issue is clear, and calls for complete co-operation from every single industry. While it is not consoling reading, purchasing agents must be reconciled to some radical developments in the immediate future.

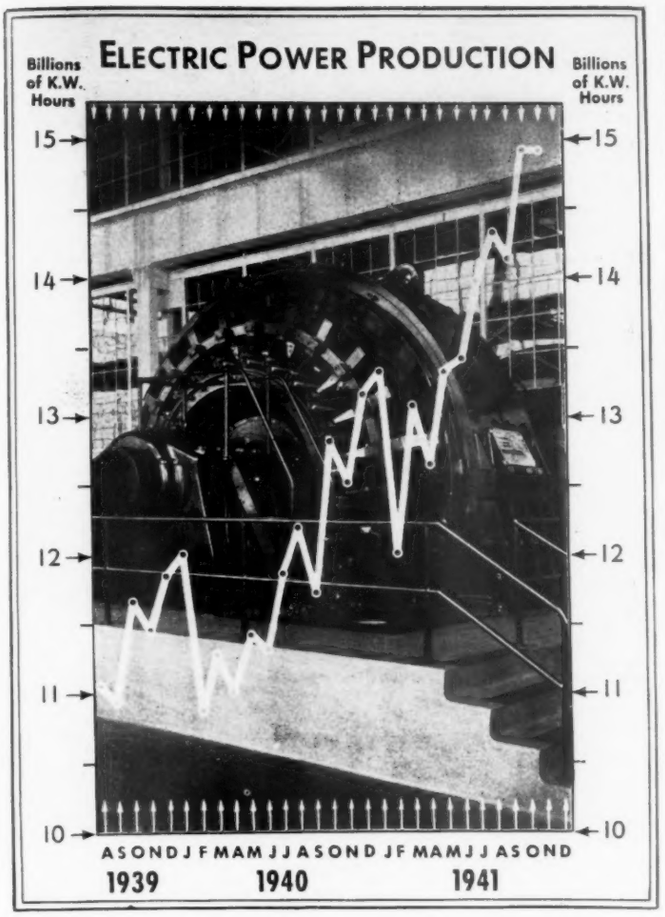
MORE→

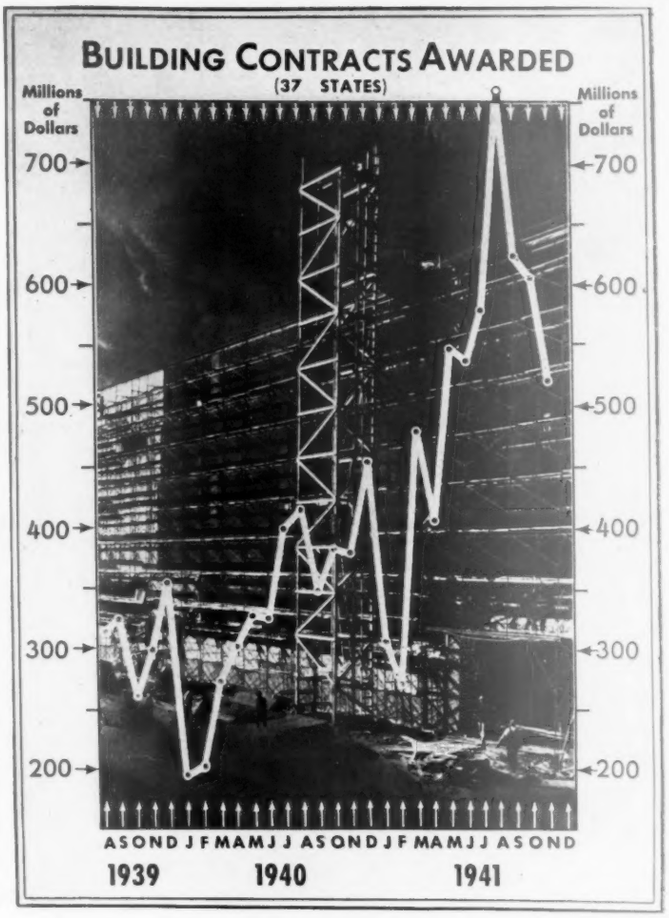

INDEX OF MANUFACTURES
Index
BASE: 1935-39 100
Index
220
210
200
190
180
170
160
150
140
130
120
110
100
Durable Goods
Non-Durable Goods
A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1939
1940
1941

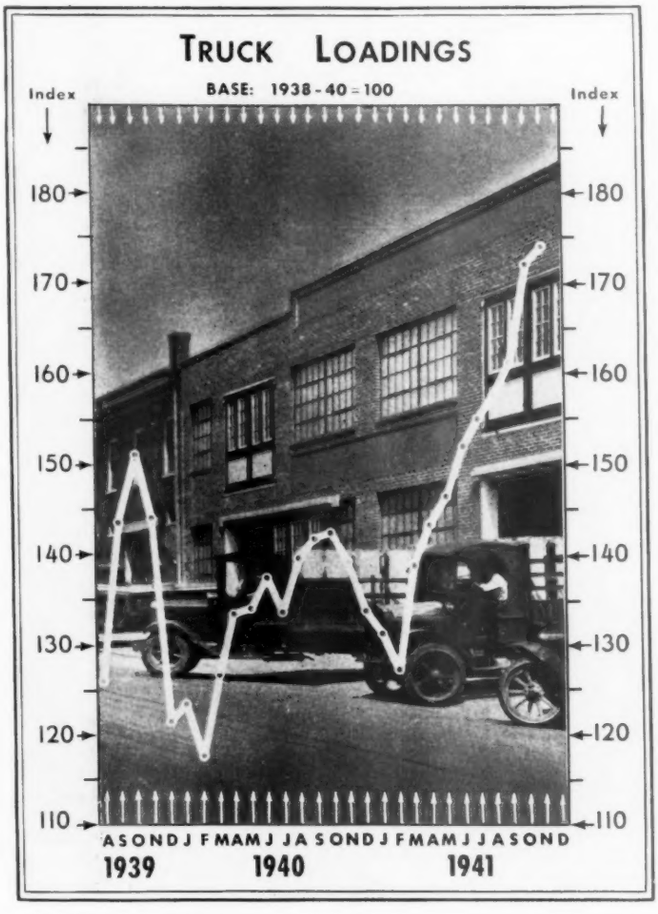

AUTOMOBILE PRODUCTION
Thousands of Cars & Trucks
500
400
300
200
100
90
A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1939
1940
1941

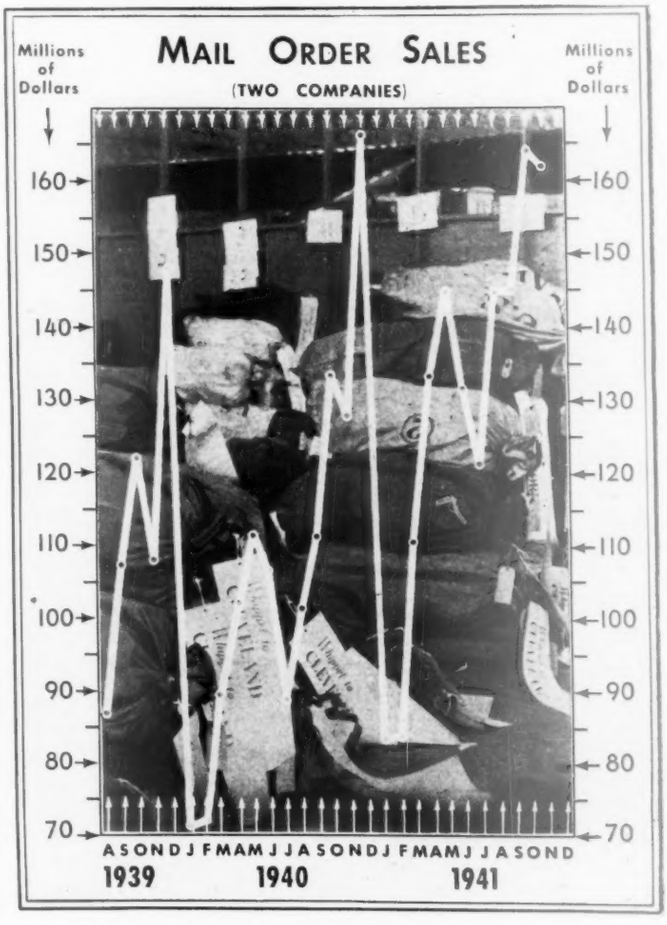

SHOE PRODUCTION
Millions of Pairs
45
40
35
30
25
A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1939
1940
1941


PAINT & VARNISH MANUFACTURE
Millions of Dollars
60
55
50
45
40
35
30
25
A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1939
1940
1941


ELECTRIC POWER PRODUCTION
Billions of K.W. Hours
Billions of K.W. Hours
15
14
13
12
11
10
A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1939
1940
1941


BUILDING CONTRACTS AWARDED
(37 STATES)
Millions of Dollars
Millions of Dollars
700
600
500
400
300
200
A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1939
1940
1941


TRUCK LOADINGS
BASE: 1938-40=100
Index
Index
180
170
160
150
140
130
120
110
A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1939
1940
1941


MAIL ORDER SALES
(TWO COMPANIES)
Millions of Dollars
Millions of Dollars
160
150
140
130
120
110
100
90
80
70
A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1939
1940
1941

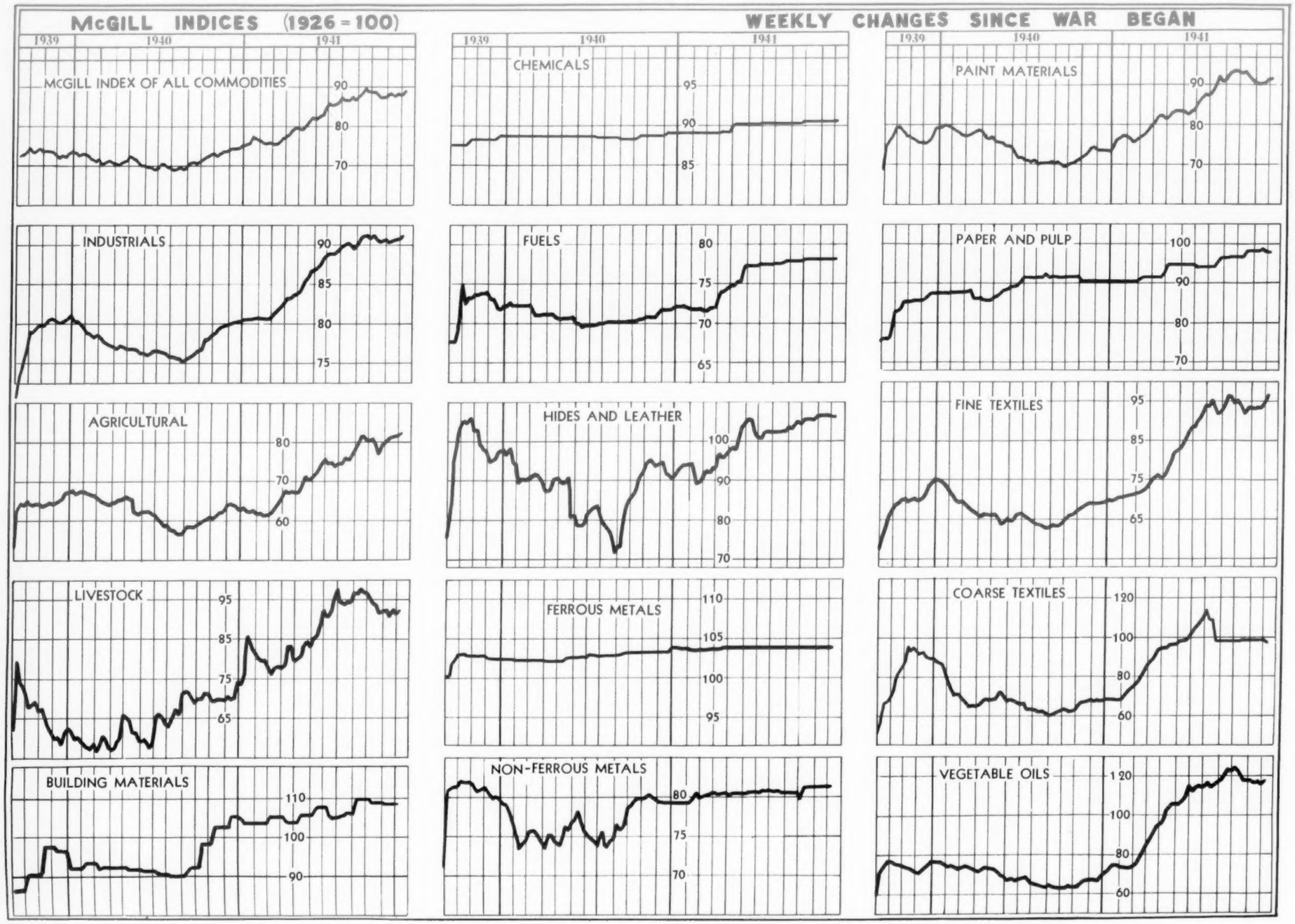
OPA CEILING PRICE SCHEDULES

Schedule No.	Commodity	Effective Date		Basis
1	Used Machine Tools	March	1	Percentage of prices for new tools.
2	Aluminum Scrap	March	24	10c per pound for pure clips and cables.
3	Zinc Scrap	March	31	7¼c per pound for clippings and trimmings.
4	Iron & Steel Scrap	April	3	$20 per ton for No. 1 Heavy Melting Steel, Pittsburgh base.
5	Bituminous Coal (Revoked May 1)	April	2	Revoked. Effective only during coal strike.
6	Iron & Steel Products	April	17	Freezes existing price schedule.
7	Combed Cotton Yarns	May	26	Reduced prices, which had advanced more than manufacturing costs.
8	Nickel Scrap	June	2	To conform with stabilization in the primary nickel market.
9	Hides & Skins	June	16	Below existing market.
10	Pig Iron	June	24	Freezes prices at 1941 second quarter levels.
11	Cotton Gray Goods	June	28	Covers combed broadcloths, lawns, dimities, and voile.
12	Brass Mill Scrap	July	22	Stabilized scrap in relation to primary copper market.
13	Douglas Fir Plywood	August	5	Prevents inflation due to defense requirements in excess of industry capacity.
14	Raw Silk	August	2	Government control of all supplies.
15	Copper	August	12	Set to bring out maximum production at profitable levels. Exceptions made for government purchases from marginal producers.
16	Raw Sugar	August	14	Below open market prices.
17	Tin	August	16	Froze price because of curtailment of supply from Far East.
18	Burlap	August	16	Below open market quotations.
19	Southern Pine	September	5	Stabilized because of heavy government purchases.
20	Copper Scrap	August	19	To conform with Schedule No. 12.
21	Formaldehyde	August	20	Below open market prices.
22	Pennsylvania Crude Oil	August	23	Further advances believed unjustified.
23	Rayon Gray Goods	August	25	To prevent inflationary price rise because of silk curtailment.
24	Animal Hair	August	27	Stabilized because of heavy government and Lend Lease purchases.
25	Cottonseed Oil(*)	August	29	Not a price ceiling; curbed speculative practices.
26	Douglas Fir Lumber	October	1	Prevented price advances exceeding cost increases.
27	Anthracite Coal (Revoked September 18)	September	12	Revoked. Covered strike situation.
28	Ethyl Alcohol	September	15	Below existing quotations which had advanced 400% in year.
29	Coke	October	1	To stabilize costs in iron and steel production.
30	Waste Paper (Sold East of Rockies)	October	1	Replaces voluntary price agreement which was not observed.
31	Acetic Acid	September	29	Froze existing price after sharp rise.
32	Paperboard (Sold East of Rockies)	October	1	Froze existing price after sharp rise and prospect of shortage.
33	Carded Cotton Yarns	October	1	Froze existing price after sharp rise.
34	Wood Alcohol	October	10	Froze existing price after sharp rise.
35	Carded Gray and Colored Cotton Yarn Goods	October	21	Sliding scale based on price of raw cotton.
36	Acetone	October	27	To prevent further advances because of shortage.
37	Normal Butyl Alcohol	October	27	To stabilize in relation to other alcohol products.
38	Glycerine	November	10	Froze existing price after sharp rise.
39	Upholstery and Furniture Fabrics	November	10	5% above September 10 prices.
40	Builders' Hardware	November	19	Froze prices at October level.
41	Steel Castings	November	15	Froze prices at July 15 level.
42	Paraffin Wax	December	1	Below existing market, which had advanced more than 100%.
43	Used Steel Drums	December	1	To stabilize market which was out of line with other steel products.
44	Douglas Fir Doors	December	10	To hold prices in line with Schedules No. 13 and 26.
45	Asphalt and Tar Roofing Material	December	12	Froze prices after sharp rise and impending shortage.
46	Second Hand Railroad Rails	December	2	To prevent diversion into scrap channels.
49	Iron and Steel Products (resale)	April	16	Brought resale prices in line with primary market.
50	Coffee	December	8	Set up because of import situation.
51	Cocoa Beans and Butter	December	8	Prevents inflationary rise because of tight shipping situation.
52	Pepper	December	8	Checks inflationary rise because of origin in Far East.
53	Fats and Oils	November	26	Establishes differentials as of November 26 in relation to price of cottonseed oil.
54	Douglas Fir Peeler Logs	December	20	To hold prices in line with Schedules No. 13, 26, and 44.

Note: At the time of going to press, an avalanche of ceiling price schedules was being released by OPA. The commodities listed above are basic key materials in which inflationary tendencies had already been noted, and the manner in which the maximum prices were set up offers an indication of how future schedules will be made effective. The schedules as now set up are by no means final. Many amendments have already been made, and as labor and raw material problems inevitably develop under the impact of war, it will be necessary to revise the schedules already published.

VOLUNTARY PRICE CEILINGS

	Commodity	Type of Action	Effective Date	
1	Wool	Warning	January	7
2	Iridium	Warning	January	15
3	Quicksilver	Warning	March	28
4	Lead	Request	April	5
5	Cadmium	Agreement	April	11
6	Farm Machinery	Request	April	22
7	Machine Tools (new)	Request	May	7
8	Oil and Gasoline	Agreement	May	23
9	Ammonium Sulphate	Request	May	26
10	Bread	Request	June	17
11	Railroad Car Wheels	Request	June	23
12	Furniture	Request	June	24
13	Household Refrigerators	Request	June	24
14	Carbon Black	Request	June	25
15	Automobiles	Warning	June	25
16	Rubber Tires and Tubes	Agreement	July	3
17	Lubricating Oil	Request	August	4
18	Pulp	Agreement	August	10
19	Lead Scrap	Warning	August	16
20	Antimony	Request	August	22
21	Solvents	Request	August	30
22	Rubber Scrap	Warning	October	5
23	Zinc	Agreement	October	10
24	Paper Grocery Bags	Agreement	October	10
25	Brass Products	Warning	October	26
26	Rayon Yarn	Agreement	October	29
27	Kraft Paper	Warning	November	3
28	Domestic Stoves	Request	November	6
29	Radios	Request	November	6
30	Glass-making Machinery	Request	November	6
31	Petroleum and Products	Agreement	November	7
32	Floor Coverings	Request	November	8
33	Steel Furniture	Request	November	9
34	Steel Forgings	Request	November	12
35	Heating Equipment	Warning	November	21
36	Railroad Equipment	Request	November	21
37	Electrical Appliances	Request	November	25
38	Dry Colors	Agreement	November	25
39	Writing, Book, and Printing Paper	Agreement	November	26
40	Hide Glue	Warning	November	28
41	Western Pine Products	Agreement	November	28
42	Textile Machinery	Request	December	2
43	Shoe Machinery	Request	December	3
44	Innerspring Mattresses	Agreement	December	3
45	Rubber "Camel Back"	Request	December	4
46	Rubber Footwear	Request	December	5
47	Asphalt	Request	December	6


McGILL INDICES (1926 = 100)
WEEKLY CHANGES SINCE WAR BEGAN
1939
1940
1941
McGILL INDEX OF ALL COMMODITIES
90
80
70
CHEMICALS
95
90
85
PAINT MATERIALS
90
80
70
INDUSTRIALS
90
85
80
75
FUELS
80
75
70
65
PAPER AND PULP
100
90
80
70
AGRICULTURAL
80
70
60
HIDES AND LEATHER
100
90
80
70
FINE TEXTILES
95
85
75
65
LIVESTOCK
95
85
75
65
FERROUS METALS
110
105
100
95
COARSE TEXTILES
120
100
80
60
BUILDING MATERIALS
110
100
90
NON-FERROUS METALS
80
75
70
VEGETABLE OILS
120
100
80
60

DENATURED ALCOHOL

Highest Production—178,000,000 gal. in 1941 (est.)
Highest Price—$1.16 per gal. in 1920
Lowest Price—26½c in 1939

	Production Denatured (000 omitted—gal.)	Consumption (000 omitted—gal.)	End of Period Stocks (000 omitted—gallons)	Price S. D. #1 per gal.
1929	114,513	114,371	1,054	$.57
1930	91,504	88,883	3,529	.521
1931	81,639	83,507	1,629	.388
1932	65,882	64,933	2,750	.424
1933	73,816	75,364	1,114	.415
1934	95,386	95,377	1,063	.392
1935	97,357	96,720	1,632	.372
1936	99,288	99,796	1,131	.327
1937	98,778	98,753	1,153	.335
1938	92,928	92,779	1,279	.317
1939	113,907	113,947	1,170	.275
1940	134,237	133,997	1,360	.298
1941				
Jan.	10,610	10,499	1,468	.315
Feb.	10,556	10,558	1,465	.315
Mar.	13,192	13,339	1,313	.316
Apr.	12,654	12,451	1,511	.333
May	14,714	14,889	1,329	.35
June	15,387	15,614	1,095	.35
July	15,242	15,035	1,293	.35
Aug.	15,065	15,264	1,089	.35
Sept.	16,908	17,100	861	.353
Oct.	18,185	18,302	740	.355
Nov.				.355
Dec.				

Production of denatured reached a new all-time peak in 1941, estimated at 178,000,000 gallons, which compares with a former high of 134,237,000 gallons in 1940. However, consumption and exports have exceeded record-breaking production which is forcefully emphasized by a glance at the statistical series pertaining to stocks on hand. On November 1 the visible supply was only 740,000 gallons, which was radically below the normal complement chronicled during the past two decades. In fact, the November 1 stock figure was the lowest on modern records. A year earlier the supply was 1,980,000 wine gallons. On November 1 warehouse stocks of ethyl alcohol were placed at 7,143,000 gallons as against 13,471,000 a year earlier. An exceptionally strong statistical position is clearly indicated for an indefinite period.

1942 PROSPECTS—Even though a concentrated effort will be made to increase producing capacity, it is apparent that defense needs will absorb the great bulk of production in 1942, and hence, there will not be sufficient alcohol available to take care of normal or civilian needs. Hence, stocks will continue to hold close to the irreducible minimum. Next year it will undoubtedly be necessary to introduce a more strict policy as regards allocation. No fireworks in the price structure are on the horizon as price ceilings will continue in force.

ALUMINUM

To provide needed aluminum, producing capacity and production are being stepped up as rapidly as possible, and this is well illustrated by noting that production in 1941 will be in the neighborhood of 650,000,000 pounds, whereas back in 1934 output totaled only 74,177,000 pounds. The long-term price trend of aluminum has been downward, and even in late 1941 when demand was at an all-time peak the unit cost of producing aluminum had declined and prices were reduced to 15c per pound, the lowest point in history.

1942 PROSPECTS—It is extremely unlikely that aluminum will be available in volume for non-defense use during 1942. The consumption of scrap aluminum is also being closely regulated and defense needs receive prior consideration. The enlarged producing capacity indicated for 1942 will provide a new peak in production which will surpass all previous records by a marked margin.

Highest Annual Production—650,000,000 (estimated) in 1941
Highest Price—67c in 1916
Lowest Price—15c in 1941

	PRIMARY PRODUCTION (pounds—000 omitted)	PRICE per lb.
1929	227,973	$.243
1930	229,037	.238
1931	177,545	.233
1932	104,888	.233
1933	85,125	.233
1934	74,177	.2158
1935	119,295	.205
1936	224,929	.205
1937	292,681	.201
1938	286,882	.20
1939	327,090	.20
1940	412,560	.187

BURLAP

Highest Annual Imports—657,723,799 yds. in 1937
Highest Price—25c per yd. in 1918
Lowest Price—4.1c per yd. in 1910 and 1921

	IMPORTS (yds.—000 omitted)	U. S. CONSUMPTION (yds.—000 omitted)	End of Period U. S. STOCKS (yds.—000 omitted)	PRICE PER YD. spot 40-10½ oz.
1935	472,785	611,200	275,000	$.0593
1936	557,347	785,000	355,000	.0537
1937	657,724	810,000	349,000	.054
1938	504,333	692,000	312,000	.0493
1939	441,484	711,949	264,000	.0694
1940	503,280	654,123	259,000	.0769
1941				
Jan.	31,225	57,600	269,000	.0812
Feb.	46,855	60,000	215,000	.0906
Mar.	43,342	67,000	187,000	.1026
Apr.	32,666	55,000	189,000	.1183
May	30,990	47,104	214,000	.1233
June	51,490	49,000	221,000	.1288
July	56,580	63,977	225,000	.1389
Aug.	48,961	60,000	198,000	.1259
Sept.	.....	63,000	213,000	.115
Oct.	.....	63,000	242,000	.115
Nov.		53,000	265,000	.115
Dec.				

Because the United States is dependent upon foreign sources for its supply of burlap, the outbreak of warfare between the United States and Japan in early December will have a drastic effect upon our supply from a long-range standpoint. Burlap stocks in the United States at the beginning of hostilities amounted to about a four-months' supply at the current rate of consumption. Approximately one month's supply was en route to the United States from Calcutta at the outbreak of the war. Supplies of burlap in the United States in late 1941 were somewhat more favorable than they were earlier in the year, but were well below normal when compared with the average for recent years. A price ceiling was established on August 16.

1942 PROSPECTS—It is likely that the importation of burlap will decline during early 1942 and the shipping space now utilized for transporting burlap will undoubtedly be diverted to more important defense materials as well as for direct military purposes. Trade sources report that altho the supply of burlap has increased during late 1941, stocks of the more desirable grades were relatively limited. It is understood that OPM is working on an allocation program for rigidly regulating distribution and consumption.

ANTHRACITE COAL

Highest Annual Production—99,612,000 tons in 1917
Highest Price—$13.50 in 1925
Lowest Price—$4.50 in 1913 and 1939

	Production (short tons—000 omitted)	Price Stove Coal, net ton mines
1929	73,828	$9.03
1930	69,385	9.02
1931	59,646	8.338
1932	49,855	7.14
1933	49,541	6.875
1934	57,168	6.933
1935	52,159	6.656
1936	54,579	6.743
1937	51,856	5.952
1938	46,099	6.048
1939	51,042	5.58
1940	50,648	6.124
1941		
Jan.	4,977	6.25
Feb.	4,432	6.25
Mar.	4,595	6.25
Apr.	3,198	6.25
May	3,858	6.25
June	4,891	6.30
July	4,681	6.40
Aug.	5,246	6.54
Sept.	5,143	6.675
Oct.	5,382	6.75
Nov.	3,832	6.75
Dec.		

The long-term trend in the domestic production and consumption of anthracite coal is downward. The highest annual production was recorded in 1917, while in 1940 the production was only slightly over 50,000,000 tons, or about half of the output of 23 years earlier. The answer for the tremendous decline in production and use is not difficult to find. The anthracite coal industry has suffered from the keen competition of heating oils. Prices in 1941 averaged at the highest level since 1936. Quotations reached a seasonal peak in August, and the price structure was then stabilized thru co-operation with the OPA.

1942 PROSPECTS—The outlook is relatively favorable for anthacite consumption during the coming year, and production will be moderately higher than in 1941. It is unlikely that anthracite consumption will ever again reach the high levels that were noted during the period 1915-30. Prices during 1942 will follow the usual seasonal upturn with a low being established in the early spring, while the high fall and winter price will not likely be much above the peak of $6.75 for stove coal reached during the fall of 1941.

BITUMINOUS COAL

More than 70% of the bituminous coal consumed is used in the industrial section north of the Ohio and Potomac Rivers and east of the Mississippi. The six leading consuming outlets are railroads, normally 27%, coke ovens, 16%, electrical utilities, 8%, steel works, 5%, stone, clay and glass products, 5%, and non-ferrous metals, 4%. There is a tremendous producing capacity in the background, and the highest level of production was reached many years ago—579,386,000 tons in 1918. For the first eleven months of this year, however, output reached 451,657,000 tons, which was the largest amount for that period since 1929. Output has exceeded consumption, and a survey shows that on November 1, stocks on hand in industries were up to 63,299,000 tons, which represents more than a 15,000,000-ton increase over the corresponding period last year.

1942 PROSPECTS—The underlying trend of both production and consumption is inescapably upward. Originally the estimate of the cost of this war was only 60 billion dollars, which subsequently increased to 100 billion, and the new estimate is 150 billion. Coal is such an important commodity in the defense program that no fireworks in the price structure will be permitted.

Highest Production—579,386,000 tons in 1918
Highest Price—$9.15 per ton in 1920
Lowest Price—$1.05 per ton in 1915

	Production (Short tons—000 omitted)	Consumption Total Industrial (000 omitted)	End of Period Stocks Total Industrial (000 omitted)	Price Clearfield Mine run, ton
1929	534,989	444,546	39,007	$1.79
1930	467,526	397,283	35,497	1.527
1931	382,089	317,572	33,655	1.479
1932	309,710	246,608	26,463	1.271
1933	333,636	254,091	31,135	1.383
1934	359,368	275,840	32,529	1.939
1935	369,324	290,289	34,876	1.867
1936	433,605	345,878	39,518	1.893
1937	442,455	375,717	45,078	2.35
1938	342,490	286,119	38,228	2.423
1939	390,791	322,425	43,382	2.556
1940	453,245	363,373	48,513	2.571
1941				
Jan.	44,070	35,650	47,073	2.575
Feb.	41,695	32,884	47,188	2.575
Mar.	48,250	36,195	49,929	2.675
Apr.	5,975	30,941	36,731	2.70
May	43,400	33,576	37,058	2.70
June	42,774	32,797	42,397	2.70
July	43,300	33,444	48,201	2.70
Aug.	45,650	34,426	53,640	2.70
Sept.	46,880	34,019	58,394	2.70
Oct.	49,800	37,080	63,299	2.70
Nov.	42,865			
Dec.				

COKE

Highest Annual Production—64,000,000 tons (est.) in 1941
Highest Price—$18.50 in 1920
Lowest Price—$1.40 in 1915

	Production (Short tons 000 omitted)	Price Furnace Coke, ton Connellsville
1929	59,884	$2.795
1930	47,972	2.594
1931	33,484	2.48
1932	21,789	2.135
1933	27,589	2.50
1934	31,822	3.772
1935	35,141	3.706
1936	46,275	2.854
1937	52,375	4.374
1938	32,496	4.003
1939	44,327	4.232
1940	56,748	4.418
1941		
Jan.	5,447	5.50
Feb.	4,998	5.50
Mar.	5,585	5.50
Apr.	4,567	5.50
May	5,387	5.90
June	5,400	6.00
July	5,592	6.00
Aug.	5,624	6.00
Sept.	5,380	6.00
Oct.	....	6.00
Nov.	....	6.00
Dec.		

The production and consumption of coke has been increased rather sharply since the outbreak of war in the fall of 1939. Coke is essential to the manufacture of steel, and the steel industry has been producing at capacity levels for an extended period. In early 1941 a government survey indicated that the coke industry was not large enough to meet all industiral demands, and as a result, considerable new capacity was added to increase production to a new record high. Despite a new record production in 1941, available supplies at the year end were of small proportions. Prices advanced steadily from late 1939 to June 1941. A further price advance was indicated during the early fall, but on October 1 the OPA under Schedule #29 placed a price ceiling on coke at the levels then in effect.

1942 PROSPECTS—With the steel industry indicated to set a new production record in 1942, there is little doubt that the domestic production as well as consumption of coke will also be of record proportions. The price ceiling in effect in late 1941 will be held unchanged for the greater part of 1942. The supply situation will remain tight during the greater part of the year with a possibility of rationing by the leading producers in the latter part of 1942.

COPPER

Highest Production—1,064,000 tons (est.) in 1941
Highest Price—37c per lb. in 1917
Lowest Price—5c per lb. in 1932-33

	Production U. S. Refined (tons)	Consumption Deliveries (tons)	Stocks Refined (tons)	Price Elec. Valley per lb.
1934	336,710	505,709	354,436	$.0866
1935	496,658	619,679	231,415	.0888
1936	748,660	819,007	161,068	.0972
1937	964,176	865,893	259,351	.1339
1938	638,076	481,803	289,755	.1023
1939	818,289	814,407	159,485	.112
1940	1,033,710	1,001,886	142,772	.1153
1941				
Jan.	93,840	119,736	116,854	.12
Feb.	93,654	112,808	97,689	.12
Mar.	95,322	103,132	89,873	.12
Apr.	89,687	80,722	98,789	.12
May	89,390	95,103	93,076	.12
June	88,560	83,430	98,164	.12
July	86,879	110,626	74,384	.12
Aug.	85,426	87,880	71,930	.12
Sept.	81,553	89,813	63,670	.12
Oct.	86,617	82,883	67,260	.12
Nov.	84,799	79,707	72,352	.12
Dec.				

Domestic copper production successfully reached a new all-time peak in 1941 approximating 1,064,000 tons. This huge supply coupled with a broad stimulation in imports failed to cope with aggregate demand. It is estimated that primary defense needs in 1942 will reach the 1,000,000-ton mark which will leave a relatively small supply for normal or civilian consuming channels. Production during the first eleven months of 1941 shows an increase of 4% over 1940, and deliveries in the same period show an increase of 18%.

1942 PROSPECTS—The goal is to stimulate copper output by at least 10%. However, there can be no escape from rigid allocation and shortages will prevail for an indefinite period. OPM's curtailment order which cuts off supplies from manufacturers of 100 odd copper items becomes effective January 1. As 1942 progresses there will be a growing shortage of copper by manufacturers producing builders' hardware, house furnishing, burial equipment, automotive trailer and tractor equipment, and many other basic lines.

COTTON

In normal times the United States consumed about 50% of the crop. In recent years exports have been limited with the result that holdings increased under the CCC program and reached a peak of approximately 11 million bales in 1938. The crops since 1938 have been relatively small averaging slightly more than 12 million bales as compared with 18,900,000 bales during the 1937-38 season. Consumption during the 1940-41 season reached an all-time peak, but total disappearance of American cotton was somewhat below normal because of the drastic decline in exports. Government holdings at the end of 1941 approximated 6 million bales.

1942 PROSPECTS—The record consumption indicated for the 1941-42 season will completely absorb the crop now estimated at 11 million bales. Exports will again be small altho some material will be sent out under the subsidy and lend-lease programs. Prices bolstered by a higher government loan in 1942 will average at the highest level since 1936-37.

Highest Production—18,946,000 bales in 1937
Highest Price—43.75c in 1920
Lowest Price—5c in 1932

	PRODUCTION (bales)	CONSUMPTION (bales)		STOCKS on Hand in Consuming Establishments (bales)	PRICE Middling 15/16 spot, per lb.
1929-30	14,825,000	6,105,840	1929	7,759,000	$.1933
1930-31	13,932,000	5,262,974	1930	10,031,480	.1381
1931-32	17,097,000	4,866,016	1931	12,045,131	.0876
1932-33	13,003,000	6,137,395	1932	11,879,851	.0662
1933-34	13,047,000	5,700,253	1933	11,976,837	.0886
1934-35	9,636,000	5,360,867	1934	10,869,206	.1255
1935-36	10,638,391	6,351,160	1935	9,820,335	.1208
1936-37	12,398,882	7,950,079	1936	9,792,416	.1228
1937-38	18,946,000	5,747,978	1937	13,606,005	.1164
1938-39	11,943,000	6,858,426	1938	17,040,606	.0886
1939-40	11,817,000	7,783,774	1939	16,440,796	.0966
1940-41	12,566,000	9,718,220	1940	16,880,377	.106
1941			1941		
Jan.		843,274	Jan.	16,542,800	.1068
Feb.		793,626	Feb.	15,944,330	.1087
Mar.		854,179	Mar.	15,154,811	.1108
Apr.		920,142	Apr.	14,308,346	.1147
May		918,902	May	13,286,356	.1297
June		875,137	June	12,488,570	.1466
July		928,943	July	11,578,282	.1655
Aug.		874,113	Aug.	10,993,954	.1707
Sept.		875,682	Sept.	13,160,223	.1795
Oct.		953,600	Oct.	15,335,416	.1731
Nov.		849,733	Nov.	16,303,656	.1721
Dec.			Dec.		

COTTONSEED OIL—CRUDE

Highest Annual Production—1,804,117 lbs. in 1927
Highest Price—28.1c in 1919
Lowest Price—2.375c in 1932

	PRODUCTION (lbs. 000 omitted)	CONSUMPTION (lbs.—000 omitted)	End of Yr. STOCKS (lbs.—000 omitted)	PRICE per lb.
1929	1,584,361	1,578,131	115,885	$.081
1930	1,616,102	1,602,064	114,498	.068
1931	1,416,800	1,403,122	126,564	.056
1932	1,571,049	1,509,408	143,902	.032
1933	1,399,655	1,348,191	170,430	.036
1934	1,224,085	1,298,590	97,469	.055
1935	1,184,039	1,182,334	132,843	.0924
1936	1,247,297	1,252,397	143,243	.0858
1937	1,626,215	1,568,646	200,603	.0799
1938	1,677,673	1,703,383	175,464	.0669
1939	1,390,000	1,392,939	181,801	.0556
1940	1,274,192	1,275,705	179,014	.0524
1941				
	QUARTERLY			
Jan.				.0547
Feb.				.0533
Mar.	450,009	475,753	167,195	.0638
Apr.				.0786
May				.0941
June	210,932	325,732	52,541	.1033
July				.1059
Aug.				.1086
Sept.	189,520	155,215	79,584	.1228
Oct.				.1194
Nov.				
Dec.				

Of all vegetable oils consumed in the United States, cottonseed oil ranks first from a volume standpoint. Current statistical position is exceedingly strong. Stocks of refined oil on December 1 were only 273,448,000 pounds in contrast to 397,015,000 chronicled a year earlier. Stocks of crude oil on the same date stood at only 159,259,000 pounds as compared with 183,925,000 a year earlier. While stocks during the closing months of the year increased along seasonal lines, it is apparent that the peaks of recent years will not be reached. All of the oil produced this season will be utilized and it will be necessary to dig deeper into the reserve stockpile. A serious shortage of vegetable oils and animal fats has been averted by unexpectedly high imports.

1942 PROSPECTS—Domestic requirements for fats and oils in the 1941-42 crop year will approximate 10½ billion pounds. In addition, possibly 700,000,000 pounds, mostly lard, will be exported, so that total requirements this season may reach the record high of 11.2 billion pounds. There is little assurance that the high rate of importation of foreign oils noted in 1941 can be maintained in 1942 due to the growing shortage of cargo space. The statistical position of cottonseed is the strongest of all oils, and it is a foregone conclusion that before another producing season approaches, stocks will reach the lowest level on modern records.

FERROMANGANESE

Highest Annual Production—600,000 long tons in 1941 (est.)
Highest Price—$475 per ton in 1917
Lowest Price—$36.50 in 1911

	PRODUCTION (Long Tons)*	PRICE PER TON
1929	376,094	$103.46
1930	309,713	99.37
1931	237,568	89.02
1932	64,223	71.99
1933	153,274	75.41
1934	139,092	85.00
1935	207,393	85.00
1936	285,295	75.62
1937	363,950	97.19
1938	194,646	97.08
1939	275,324	86.55
1940	473,667	110.00
1941		
Jan.	35,337	120.00
Feb.	33,627	120.00
Mar.	55,460	120.00
Apr.	56,871	120.00
May	58,578	120.00
June	53,854	120.00
July	57,710	120.00
Aug.	52,735	120.00
Sept.	46,932	120.00
Oct.	55,495	120.00
Nov.	47,669	120.00

* Net tons since 1938.

Ferromanganese is essential for the manufacture of high grade steels used in the national defense program. Domestic production has broadened steadily since the outbreak of the war and the total in 1941 reached a new all-time record high. Manganese ore is domestically produced, but we are dependent upon foreign sources for the largest portion of our supply. The main foreign sources of supply are Brazil, Cuba, the Gold Coast of Africa, and British India. We have also received small shipments from such other foreign producing areas as Chile, Mexico, the Philippine Islands, and the Union of South Africa. Manganese was one of the materials on the Army and Navy critical list and fortunately the government build up a large stockpile of manganese ore prior to and during the early part of the war. The shipping situation in regard to many of our main sources of supply is critical, and it is questionable whether a desirable rate of importation can be maintained.

1942 PROSPECTS—A new record in ferromanganese production is indicated for 1942. Consumption will be kept at a high level because of the necessity of ferro-steel production for the defense program. Available stocks by the end of 1942 will be considerably lower than at the beginning of the year.

FUEL OIL—DISTILLATE AND RESIDUAL

Both domestic production and consumption reached new peaks in 1941. At the end of the year available stocks were somewhat larger than a year earlier because unseasonably warm weather in the fall of 1941 had resulted in holding back the seasonal increase in consumption. Petroleum products are vital to the national defense program and this country which is the world's leading producer of petroleum and derivatives produced more of these materials in 1941 than ever before. A large producing capacity is available and altho the transportation of petroleum products from producer to consumer was adversely affected by the transfer of many tankers to the British during the summer, this situation was resolved favorably in the early fall when most of these ships were returned for domestic use.

1942 PROSPECTS—Production will reach a new peak in 1942 and supplies should be available for all civilian and defense consumers. The price average in 1942 will compare favorably with the 1941 average, which was the highest for any year in more than a decade.

Highest Production—519,000,000 bbls. (est.) in 1941
Highest Price—$1.80 in 1925
Lowest Price—60c in 1931-32

	PRODUCTION bbls. (000 omitted)	CONSUMPTION Domestic, bbl. (000 omitted)	STOCKS Total U. S. (bbls.—000 omitted)	PRICE Bunker C bbl. N. Y.
1931	336,967	334,668	135,856	$.837
1932	294,750	308,157	130,753	.724
1933	316,439	316,344	123,500	.88
1934	335,353	331,989	110,397	1.24
1935	360,061	366,723	103,984	1.07
1936	413,874	410,641	107,049	1.082
1937	458,770	442,355	104,073	1.308
1938	446,664	409,282	138,195	1.042
1939	467,690	458,461	126,008	1.047
1940	499,525	501,014	132,244	1.34
1941				
Jan.	44,898	53,827	124,196	1.25
Feb.	40,676	48,395	118,934	1.25
Mar.	43,064	52,492	112,908	1.25
Apr.	41,440	43,056	112,172	1.298
May	43,540	41,230	116,048	1.35
June	42,579	39,891	118,222	1.35
July	44,370	39,833	123,437	1.35
Aug.	45,245	39,836	129,431	1.35
Sept.	44,142	43,205	135,164	1.365
Oct.				1.488
Nov.				1.50
Dec.				

PIG IRON

Highest Annual Production—55,600,000 short tons in 1941 (est.)
Highest Price—$52.11 in 1917
Lowest Price—$12.34 in 1915

	PRODUCTION (Short tons 000 omitted)	PRICE Iron Age Composite
1929	47,360	$18.43
1930	35,167	17.17
1931	20,468	15.51
1932	9,729	14.00
1933	14,798	15.20
1934	17,821	17.58
1935	23,529	18.03
1936	34,293	18.90
1937	41,005	22.74
1938	21,026	21.67
1939	35,317	21.19
1940	46,816	22.64
1941		
Jan.	4,664	23.45
Feb.	4,198	23.45
Mar.	4,704	23.53
Apr.	4,334	23.61
May	4,600	23.61
June	4,553	23.61
July	4,771	23.61
Aug.	4,791	23.61
Sept.	4,717	23.61
Oct.	4,856	23.61
Nov.	4,703	23.61
Dec.		

In 1941 a new record output of approximately 55,600,000 tons was recorded, yet the outlook for adequate supplies of pig iron remains far from reassuring. The bottleneck in the great effort to speed up production of steel is the growing shortage of pig iron and scrap. This obstacle may hold production of steel in 1942 around 4 million tons under capacity. This figure is based on the assumption that at least 23 million tons of scrap will be available next year. OPM in a statistical review states that while 87 million tons of steel could be made next year on the basis of capacity, actual production may not exceed 83 million tons by any marked margin because of the pig iron shortage estimated at 6,400,000 tons. The report further states that theoretically 93 million tons could be made in 1943, but that production is likely to hold at a peak of 86 million tons because of a pig iron shortage in that year of 9,800,000 tons. Pig iron producing capacity will be added as quickly as possible.

1942 PROSPECTS—1942 will prove another difficult year in that new peaks in production will prove inadequate to cope with defense as well as civilian needs. Hence, under the new SPAB allocation program, civilian consumption will be further restricted.

HIDES

	PRODUCTION Inspected Cattle Slaughter (000 omitted)	CONSUMPTION Total Wettings Pieces (000 omitted)	STOCKS—end of yr. Raw—In Process and Finished (Hides)	PRICES Light Native Cows per lb.
1929	8,324	19,018	11,529	$.1565
1930	8,170	17,078	12,332	.1169
1931	8,108	16,041	11,603	.0849
1932	7,625	14,661	11,013	.0565
1933	8,655	17,432	10,167	.094
1934	9,945	19,914	10,932	.0876
1935	9,676	21,096	11,188	.099
1936	10,972	22,888	11,294	.1143
1937	10,070	21,726	11,068	.1513
1938	9,776	19,187	9,951	.1043
1939	9,446	21,768	9,276	.1206
1940	9,756	21,353	9,544	.1269
1941				
Jan.	891	2,201	9,588	.1356
Feb.	717	2,051	9,370	.126
Mar.	766	2,124	8,958	.132
Apr.	792	2,130	8,677	.143
May	908	2,292	8,603	.156
June	867	2,227	8,659	.159
July	968	2,443	8,509	.15
Aug.	968	2,436	8,459	.15
Sept.	1,004	2,389	8,374	.153
Oct.	1,119	2,642	8,378	.155
Nov.				.155
Dec.				

Highest Production—10,972,000 in 1936
Highest Price—25.75c in 1928
Lowest Price—4.25c in 1932

For four consecutive years the cattle production cycle in this country has moved steadily upward—68,083,000 head on farms January 1, 1938; 71,666,000 head on January 1, 1941, and 73,000,000 head indicated January 1, 1942. The highest number on record was 74,262,000 on January 1, 1934. The United States is not self-sustaining in hide production. Imports, after shrinking to subnormal levels during the early depression era, have rebounded, reflecting the national emergency. Imports of hides and skins during the first nine months of 1941 totaled 438,184,133 pounds—the largest for any similar period since 1923. In 1940 receipts totaled 251,770,184 pounds.

1942 PROSPECTS—The goal of the government is to increase cattle slaughter in 1942 at 3 million head over 1941, which means a total of 28 million as compared with 25 million in 1941. Government effort will result in a volume of importation comparable with 1941. Prices will continue under the domination of ceiling levels controlled by OPA.

LEATHER

Highest Production—27,275,000 pieces (est.) in 1941
Highest Price—92c in 1919
Lowest Price—20c in 1933

Note that latest stocks—raw, in process, and finished—altho well above the low average chronicled in 1939, stand materially under the ten-year average 1929-38. Production reached a new all-time peak in 1941, estimated at 27,275,000 pieces. Supplies have moved rapidly into consuming channels. The records show that during the first nine months of the year consumption aggregated 21,588,000 pounds as against 15,707,000 a year earlier. Consumption has exceeded output. Leather plays an important role in the national defense program. Reflecting government purchases, boot and shoe production in 1941 reached a new record high, approximating 491,000,000 pairs. This compares with 398,000,000 in 1940.

1942 PROSPECTS—A further stimulation in production is indicated. Boot and shoe production will experience difficulty in equalling the 1941 rate due to the fact that 1941 production exceeded total demand. Price fluctuations will hold within narrow limits in alignment with adherence to the ceiling prices established on hides.

	PRODUCTION Cattle Hide Leather (000 omitted)	CONSUMPTION All Domestic Tanned Cattle Hide Leather (000 omitted)	STOCKS Raw—In Process, and Finished End of Period (000 omitted)	PRICE Union Sole Crops per lb.
1929	19,148	19,854	15,594	$.507
1930	17,676	16,310	16,662	.431
1931	16,235	16,751	15,915	.348
1932	14,583	15,219	15,024	.275
1933	17,115	18,278	14,811	.376
1934	19,771	19,186	18,007	.282
1935	21,932	21,759	17,735	.337
1936	22,628	22,775	17,173	.349
1937	22,380	22,013	15,373	.402
1938	19,047	20,291	13,645	.293
1939	22,095	22,470	12,997	.312
1940	21,070	21,147	13,998	.323
1941				
Jan.	2,182	2,176	14,063	.354
Feb.	2,120	2,266	13,656	.349
Mar.	2,155	2,551	13,221	.353
Apr.	2,208	2,411	13,031	.365
May	2,256	2,365	13,184	.378
June	2,232	2,256	13,479	.376
July	2,373	2,581	13,387	.405
Aug.	2,375	2,494	13,497	.408
Sept.	2,389	2,494	13,496	.405
Oct.	2,671	2,488	13,880	.406
Nov.				.415
Dec.				

LEAD

	PRODUCTION Refined (tons)	CONSUMPTION Shipments (refined—tons)	End of Period STOCKS American (tons)	PRICE A. S. & R. per lb. N. Y.
1930	688,787	637,384	103,247	$.055
1931	478,592	429,949	151,653	.042
1932	342,137	317,261	176,157	.032
1933	374,153	347,156	203,061	.039
1934	412,298	379,807	235,457	.039
1935	421,764	433,456	222,306	.041
1936	463,006	513,361	172,423	.047
1937	533,215	575,933	129,131	.06
1938	408,539	421,625	115,902	.047
1939	497,991	555,074	58,777	.051
1940	585,480	603,143	40,926	.052
1941				
Jan.	62,048	55,711	47,248	.055
Feb.	54,231	54,859	46,604	.056
Mar.	61,503	62,090	45,996	.076
Apr.	56,086	59,169	42,899	.0585
May	60,509	69,382	34,018	.0585
June	48,224	57,969	24,265	.0585
July	48,989	54,067	19,172	.0585
Aug.	51,157	55,055	15,330	.0585
Sept.	44,903	47,093	13,148	.0585
Oct.	41,127	43,537	10,735	.0585
Nov.				
Dec.				

Highest Annual Production—696,000 tons in 1926
Highest Price—11c per lb. in 1917
Lowest Price—2.65c per lb. in 1932

Whereas new record production peaks were chronicled for more nonferrous metals in 1941, lead did not participate. Despite a growing shortage, the underlying trend of production since the first of the year has moved irregularly downward. Note that production in October was 41,127 tons against 62,048 tons in January, and 56,600 tons in October a year ago.

1942 PROSPECTS—As in the case of zinc, some increase in the price is under consideration in the endeavor to speed up production. The stage is set for a continuation of heavy demand under the leadership of the defense program. There is no assurance that the high rate of importation noted in 1941 can be maintained. Deliveries from Mexico and Canada are almost wholly dependent upon railroad transportation. Deliveries by water are hampered by a growing shortage of cargo space and the danger of more intensified ocean warfare.

LINSEED OIL

Highest Annual Production—861,000,000 lbs. (est.) in 1941
Highest Price—29.6c per lb. in 1919
Lowest Price—5.3c per lb. in 1932

	PRODUCTION pounds (000 omitted)	CONSUMPTION pounds (000 omitted)	STOCKS End of Period lb. (000 omit.)	PRICE Carloads Cooperage per lb.
1929	763,577	501,235	140,856	$.124
1930	516,326	351,335	113,423	.125
1931	520,735	298,773	154,484	.084
1932	326,569	219,746	121,770	.063
1933	405,948	241,325	157,736	.091
1934	370,769	258,484	113,721	.093
1935	502,043	291,684	146,526	.094
1936	455,959	305,330	117,300	.098
1937	665,099	375,220	191,483	.108
1938	440,614	298,481	141,803	.09
1939	564,508	344,975	142,457	.093
1940	606,246	386,225	153,804	.097
1941		QUARTERLY		
Jan.				.096
Feb.				.096
Mar.	196,281	106,787	192,850	.099
Apr.				.108
May				.109
June	183,309	143,100	150,936	.109
July				.114
Aug.				.112
Sept.	236,744	141,913	161,255	.113
Oct.				.108
Nov.				.101
Dec.				

Fortunately, large stocks of flaxseed exist in the Western Hemisphere. For two consecutive years the domestic crop has ruled materially above average, totaling 31,825,000 bushels this year and 31,271,000 in 1940. Unofficial estimates for the new crop in the Argentine range around 50 million bushels, to which will be added a carryover in the neighborhood of 25 million bushels. Production of linseed oil during the third quarter of the year was by far the largest ever recorded. Consumption also reached new peaks, yet on October 1 visible stocks were placed at 161,255,000 pounds, representing a volume which has never been exceeded for this period of the year. A year earlier stocks were 115,146,000 pounds. Huge supplies are needed because of the diminishing trend of tung oil stocks and imports.

1942 PROSPECTS—The stage is set for a record-breaking volume of linseed oil consumption in 1942. Due to the artificial conditions surrrounding tung oil there is not an overabundance of drying oils in the United States. The existence of a government loan on flaxseed will automatically act as a floor under the price structure. The price level during the fall period discounted seasonal forces as well as the reduction in the tariff rate from the Argentine. A strengthening in the statistical position is still indicated as 1942 progresses.

PAPERBOARD

The record 1941 output of paperboard was readily absorbed in consuming channels and the volume of new orders each month in the year exceeded the production rate with the result that unfilled orders at the end of the year were at the highest point on modern records. The box board industry in late 1941 was adversely affected by a shortage of waste paper. The government, in cooperation with the industry, stimulated the conservation and collection of waste paper all over the country. Paper board was placed under an OPA ceiling price schedule on October 1, and during the closing months of 1941 practically all of the major producers were finding it necessary to ration their production to their customers.

1942 PROSPECTS—The waste paper situation will remain critical during the greater part of the year. Box board production will reach a new all-time high but will undoubtedly not be sufficient to meet all consuming demands from government and civilian sources.

Highest Production—6,100,000 short tons in 1941 (est.)

	PRODUCTION (Short tons)	NEW ORDERS (Short tons)	UNFILLED ORDERS (End of Period)
1934	2,839,705	2,870,470	65,784
1935	3,294,055	3,281,525	81,894
1936	3,658,871	3,720,996	130,472
1937	4,293,717	4,163,060	75,994
1938	3,816,502	3,827,460	94,411
1939	4,882,636	4,984,774	173,212
1940	5,175,107	5,112,272	115,143
1941			
Jan.	446,979	520,931	160,561
Feb.	426,419	470,671	202,284
Mar.	485,758	543,988	252,611
Apr.	499,930	580,038	330,779
May	526,286	572,522	370,151
June	504,413	525,325	383,534
July	503,620	569,252	435,891
Aug.	545,116	565,853	452,966
Sept.	538,405	542,792	444,736
Oct.			
Nov.			
Dec.			

PETROLEUM

Highest Annual Production—1,358,000 bbls. (est.) in 1941
Highest Price—$3.50 per bbl. in 1920
Lowest Price—25c in 1933

	PRODUCTION Crude, bbls. (000 omitted)	CONSUMPTION Crude, minus Calif. (000 omitted)	STOCKS bbls. (000 omitted) end of year	PRICE Mid-Continent-32-32.9 per bbl.
1929	1,007,323	768,379	381,198	$1.189
1930	898,011	736,560	361,876	1.066
1931	851,081	731,490	322,603	.544
1932	785,159	652,025	294,172	.792
1933	905,656	711,146	320,989	.577
1934	908,065	746,810	301,890	.92
1935	996,596	793,387	277,225	.92
1936	1,099,687	888,449	253,343	1.015
1937	1,279,160	978,905	276,261	1.1131
1938	1,214,355	952,373	239,470	1.095
1939	1,264,962	1,034,892	205,283	.936
1940	1,353,219	1,096,142	229,712	.94
1941				
Jan.	110,647	93,809	228,523	.94
Feb.	100,791	85,506	229,143	.94
Mar.	112,817	94,265	230,059	.94
Apr.	111,080	94,175	229,405	.99
May	116,975	100,035	226,706	1.026
June	115,027	98,033	224,508	1.09
July	118,251	108,164	221,291	1.09
Aug.	121,354	107,161	216,513	1.09
Sept.	119,446	105,629	212,694	1.09
Oct.				1.09
Nov.				1.09
Dec.				

Altho a new peak in oil production was chronicled in 1941, expanding domestic consumption of petroleum and its derivatives resulted in a reduction in stocks and the supply available at the end of the year was the lowest since the 1920's. Prices for crude petroleum were advanced in the spring of 1941 but the Office of Price Administration rescinded the higher prices in many fields and in late 1941 the industry was agitating for a price rise on the grounds that the low quotations then prevailing prevented normal exploration and development programs. Contrary to early expectations no large export movement of petroleum developed in 1941. Shipments abroad were confined mostly to exports of high octane aviation gasoline, most of which was shipped under the lease-lend program to Great Britain and Russia.

1942 PROSPECTS—The problems facing the petroleum industry in early 1942 are: First, maintaining adequate transportation facilities; second, obtaining an adequate supply of machiney and equipment; and third, receiving a profitable return for their products.

RAYON

Highest Annual Production—575,900,000 lbs. (est.) in 1941
Highest Price—$7.75 per lb. in 1919
Lowest Price—42c per lb. in 1932

	FILAMENT YARN PRODUCTION (pounds—000 omitted)	CONSUMPTION Deliveries (pounds—000 omitted)	STOCKS END OF YR.—lbs. (000 omitted)	PRICE 300-denier lb. N. Y.
1936	277,600	297,800	3,900	$.4854
1937	321,700	267,100	56,800	.497
1938	257,600	274,100	39,500	.4581
1939	331,200	362,500	6,400	.4637
1940	390,000	388,700	6,300	.48
1941	Quarterly			
Jan.	1st	35,000	8,900	.48
Feb.	Quarter	31,600	10,000	.48
Mar.	106,200	35,400	10,200	.48
Apr.	2nd	38,700	7,400	.48
May	Quarter	40,200	5,800	.48
June	112,000	38,300	4,600	.48
July	3rd	39,400	3,600	.48
Aug.	Quarter	37,300	4,200	.48
Sept.	114,200	37,000	4,900	.486
Oct.		41,700	5,400	.49
Nov.		38,600	4,500	.49
Dec.				

Production reached a new all-time high in 1941 estimated at 575,900,000 pounds. During the first eleven months of the year domestic shipments of rayon yarns were 413,300,000 which represents a 16% increase over shipments of 354,700,000 pounds a year earlier. Stocks of rayon filament yarns in the hands of producers on December 1 amounted to 4,500,000 pounds which is a slight decrease from the 5,300,000 pounds held a month earlier. However, inventories reflect a sizable poundage of unreleased reserve yarn held on order 37-A for former silk users. Stocks in general are radically below the normal complement and by the end of the year stocks in producers' hands will reach record lows.

Briefly, a study of the textiles situation in general clearly reveals the fact that total output of rayon, silk, and cotton goods will fall short of demand.

1942 PROSPECTS—The situation may be summed up in the statement of shortage and more shortage. This means more strict government control and allocation. Artificial conditions will feature the rayon market for the duration of the war, and particularly until trade relations with Japan are resumed.

ROSIN

Highest Annual Production—2,500,000 bbls. in 1908-09
Highest Price—$7.142 per bbl. in 1919
Lowest Price—76.7c in 1932

A marked change has taken place in the underlying statistical position of rosin in recent years. A few years ago in order to bolster the income of rosin producers, the government, thru the Commodity Credit Corporation, inaugurated a loan on new production which had the effect of sealing rather sizable portions of the crop and reducing the "free" supply. Improvement in consuming trends during 1941, as well as a relatively small crop, brought about a substantial reduction in government-held supplies, with the result that on November 15, 1941, CCC holdings totaled only 685,000 packages, or approximately half of those held a year earlier.

1942 PROSPECTS—The rosin loan rates for 1942 as announced in early December are substantially above the 1941 figure, and will average at the rate of $3.05 per cwt. against an average of $2.50 in 1941. Rosin prices during 1942 will average at the highest level in recent years.

	PRODUCTION (000 omitted) bbls.	CONSUMPTION (Receipts) (bbls.)	STOCKS End of Year Jack. Sav. & Pens. (bbls.)	PRICE—Grade I 100-lb. bbl. Savannah Calendar Year
1928-29	1,865	1,214,228	100,722	1929.. $3.286
1929-30	2,081	1,396,436	149,232	1930.. 2.395
1930-31	2,000	1,319,022	266,056	1931.. 1.633
1931-32	1,665	1,182,780	347,591	1932.. 1.159
1932-33	1,498	865,733	237,350	1933.. 1.478
1933-34	1,631	1,009,402	142,574	1934.. 1.983
1934-35	1,665	974,922	259,391	1935.. 1.914
1935-36	1,647	976,223	156,291	1936.. 2.384
1936-37	1,632	872,752	109,057	1937.. 3.442
1937-38	1,725	779,508	139,444	1938.. 2.058
1938-39	1,833	971,784	609,502	1939.. 2.262
1939-40	1,318	517,041	544,281	1940.. 1.918
1940-41	1,174	396,235	522,126	1941
1941—Jan.		17,906	560,045	Jan. 1.809
Feb.		11,941	542,317	Feb. 1.809
Mar.		9,996	522,126	Mar. 1.781
Apr.		19,337	505,860	Apr. 1.871
May		35,635	490,186	May 1.865
June		31,069	483,751	June 1.88
July		33,706	461,157	July 2.20
Aug.		29,886	428,945	Aug. 2.44
Sept.		29,282	419,979	Sept. 2.49
Oct.		24,526	372,983	Oct. 2.44
Nov.		34,516	279,168	Nov. 2.63
Dec.				Dec.

RUBBER

Highest Annual Imports—980,000 long tons (est.) in 1941
Highest Price—$1.21 in 1925
Lowest Price—2.56c in 1932

	IMPORTS (Long Tons)	CONSUMPTION by U. S. Mfrs. (long tons)	End of Period STOCKS Total on Hand and Afloat (long tons)	PRICE spot, per. lb. N. Y.
1929	560,865	469,106	167,525	$.2124
1930	488,443	377,231	258,281	.1194
1931	495,163	348,985	376,696	.0611
1932	400,787	317,860	426,595	.0341
1933	411,615	405,365	420,147	.0593
1934	469,484	454,728	400,276	.1289
1935	448,126	493,412	342,094	.1232
1936	490,885	574,303	275,431	.1644
1937	584,851	543,600	325,303	.1936
1938	400,178	419,589	276,605	.1467
1939	499,616	592,000	216,895	.1766
1940	818,624	648,500	434,814	.2009
1941				
Jan.	86,833	65,989	462,580	.199
Feb.	73,973	62,692	457,327	.204
Mar.	87,123	69,024	478,375	.221
Apr.	63,305	71,374	483,251	.228
May	101,404	71,365	506,693	.239
June	64,577	84,912	514,607	.218
July	97,081	68,653	527,521	.222
Aug.	106,539	55,365	536,599	.226
Sept.	83,151	53,655	615,440	.225
Oct.	72,222	60,418	627,344	.225
Nov.				.225
Dec.				

Strict control allocation and price is a certainty. Fortunately there is no critical shortage, but the fact remains that the supply of rubber in the hands of the Rubber Reserve Company is only equal to about seven months' normal consumption. In 1941 an agreement was made with the British-Dutch Rubber Cartel and production quotas were raised to 120% of theoretical capacity, or to 1,866,000 tons a year. October rubber consumption exceeded the arbitrary consumption total set by OPM. The pre-arranged figure was 47,900 long tons. The actual consumption volume reached 60,418 tons. A glance at the statistical series shows that stocks on hand and afloat have registered a material increase since the first of the year. OPM's objective is a consumption volume during the closing six months of 1941 of only 300,000 long tons.

1942 PROSPECTS—More rigid control is indicated for 1942. Civilian consumption will be cut drastically as compared with year-earlier figures. The government will make every effort to stimulate imports, particularly now that a state of war exists between Japan and this country. The fact that there is a growing shortage of cargo space should not have any profound effect upon rubber importation for the simple reason that other commodities of less practical value will be sacrificed at the expense of rubber. Briefly, artificial conditions will predominate for an indefinite period.

SHELLAC

Highest Annual Imports—38,446,700 lbs. in 1923
Highest Price—$1.95 in 1920
Lowest Price—7½c in 1932

	IMPORTS (pounds—000 omitted)	SALES OF PAINT, VARNISH AND LACQUER —Reported 579 establishments	PRICE T. N. per lb. N. Y.
1934	10,219	$276,206	$.2424
1935	20,054	334,278	.1567
1936	15,198	382,557	.1479
1937	20,760	402,126	.1319
1938	12,553	333,209	.1126
1939	27,818	379,277	.1265
1940	27,992	396,623	.1552
1941			
Jan.	1,802	33,408	.163
Feb.	4,800	32,538	.181
Mar.	2,197	38,541	.226
Apr.	766	50,029	.245
May	3,852	56,055	.245
June	3,378	52,112	.254
July	4,574	46,809	.284
Aug.		46,807	.285
Sept.		48,354	.304
Oct.		49,103	.305
Nov.			.305
Dec.			

Shellac is used in many industries and is important in the making of electrical instruments, insulation, explosives, abrasive wheels, and particularly in the production of anti-corrosive and anti-fouling paints for the protection of the hulls of steel vessels. Prices since the outbreak of the war as portrayed by T. N. have registered an increase that measures 238%. Imports have held on an abnormally high plane for three consecutive years and this is fortunate because shellac is a commodity of foreign origin and there is no definite assurance of a continuation of an ample rate of importation. Already there is a shortage of ocean cargo space and transportation and insurance costs are destined to remain on an inflated plane for the duration of the war. There is no danger of any early shortage or the necessity for introducing an allocation system. However, the underlying trend of consumption is basically upward and uncertainties will surround all commodities of foreign origin.

1942 PROSPECTS—The total volume of consumption in 1942 will exceed the high volume chronicled in 1941. Stocks in this country are above average but it is logical to assume that the underlying trend of visible supplies will diminish as 1942 progresses.

SILK

Highest Annual Imports—661,611 bales in 1929
Highest Price—$17.85 per lb. in 1920
Lowest Price—$1.115 per lb. in 1934

Raw silk stocks in this country have been commandeered by the Government, and supplies available for civilian consumption are, for all practical purposes, nil. OPM has taken measures to release frozen stocks, but supplies have gone exclusively to manufacturers with defense orders. Now that a state of open warfare exists between the United States and Japan, it is indeed problematical when this country can obtain supplies in volume. During the months of August thru October deliveries of silk to American mills were only 10,914 bales, which is a radical contrast to the 98,894 delivered last year.

1942 PROSPECTS—A critical shortage of silk is inevitable, and this will be the case until trade relations with Japan are resumed. No silk will be available for civilian use next year, and it is, therefore, entirely a question of experimenting with and utilizing substitutes.

	PRODUCTION Imports (bales)	CONSUMPTION Deliveries (bales)	End of Yr. STOCKS Storage at N. Y. (bales)	Spot, per lb. N. Y. PRICE
1929	661,611	619,747	90,772	$5.078
1930	549,884	582,226	58,430	3.657
1931	605,919	594,889	69,460	2.54
1932	547,195	553,818	62,837	1.601
1933	503,376	469,727	96,786	1.636
1934	430,854	461,706	65,934	1.313
1935	486,150	497,143	54,941	1.641
1936	444,113	454,640	44,444	1.779
1937	430,420	425,299	49,535	1.875
1938	415,537	411,794	53,278	1.706
1939	385,763	383,431	55,610	2.729
1940	329,505	312,867	72,248	2.786
1941				
Jan.	19,610	28,425	63,433	2.559
Feb.	18,784	28,111	54,106	2.609
Mar.	21,626	25,828	49,904	2.829
Apr.	23,007	23,538	49,373	2.829
May	23,408	22,440	50,341	2.895
June	27,346	24,251	53,436	3.026
July	22,300	28,528	47,208	3.105
Aug.	8,849	2,069	53,988	3.08
Sept.	3,705	4,685	53,008	3.08
Oct.	8,660	4,160	57,508	3.08
Nov.				3.08
Dec.				

STEEL

Highest Annual Production—82,000,000 net tons in 1941 (est.)
Highest Price—$5.334 in 1917
Lowest Price—$1.366 in 1914

	INGOT PRODUCTION (000 omitted)—net tons)	SHIPMENTS Finished Prod. (000 omitted—net tons)	PRICE Iron Age Comp. cwt.
1929	61,736	16,825	$2.28767
1930	44,589	12,842	2.09001
1931	28,606	8,405	1.95769
1932	15,123	4,329	1.87355
1933	25,724	6,324	1.85085
1934	29,181	6,523	2.04541
1935	38,183	8,112	2.06779
1936	53,499	11,945	2.11391
1937	56,636	14,184	2.5362
1938	31,752	7,286	2.4582
1939	52,797	11,752	2.3109
1940	66,982	14,976	2.3015
1941			
Jan.	6,928	1,682	2.3047
Feb.	6,238	1,548	2.3047
Mar.	7,132	1,720	2.3047
Apr.	6,757	1,688	2.3047
May	7,053	1,745	2.3047
June	6,801	1,669	2.3047
July	6,822	1,667	2.3047
Aug.	7,001	1,754	2.3047
Sept.	6,820	1,664	2.3047
Oct.	7,243	1,851	2.3047
Nov.	6,670	1,624	2.3047
Dec.			

The year 1941 marked a new record high in the production of steel approximating 82 million tons. Due to an unpredicted national defense program this huge volume of steel has proven inadequate, which in turn has necessitated control and allocation. A study prepared by the American Iron & Steel Institute shows that distribution of steel by consuming industries has changed radically since 1939. Last year the shipbuilding industry absorbed about 1.9% of aggregate output. Now the percentage is approaching 5%. Oil, gas, and mining has jumped from 2.3% last year to more than 4.2%. Railroad utilization has increased from 7.8% in 1940 to nearly 10%. Automotive use has slumped from 14.2% to 7.6%.

1942 PROSPECTS—The great need of the hour is metals. New producing capacity is in the process of being completed, and there is every indication of new record peaks in output next year. However, thruout 1942 there can be no escape from a shortage for civilian consumption and a continuation of rigid control and allocation. Incidentally, the McGill Ferrous Metal Index of iron and steel prices has advanced only 4% since the beginning of the war. Meanwhile, All Commodities advanced 38%. When this is broken down, the Industrial Group has jumped 27% while Agricultural Commodities have risen more than 50%.

SULPHATE PULP

Highest Production—4,200,000 tons (est.) in 1941
Highest Price—$8.00 in 1920
Lowest Price—$1.25 in 1932, 1938, and 1939

	PRODUCTION (tons)	CONSUMPTION (tons)	STOCKS END OF YEAR (tons)	PRICE Kraft Domes. cwt.
1934	1,246,269	1,132,540	7,457	$2.091
1935	1,467,749	1,468,967	6,239	1.952
1936	1,794,734	1,795,483	5,490	1.893
1937	2,184,500	2,168,690	21,300	2.652
1938	2,295,934	2,280,506	36,728	1.995
1939	2,952,909	2,971,550	18,900	1.601
1940	3,722,422	3,706,200	35,100	2.753
1941				
Jan.	355,713	342,400	48,400	3.063
Feb.	323,258	320,500	51,100	3.063
Mar.	360,073	362,200	49,000	3.063
Apr.	353,677	364,900	37,800	3.063
May	377,850	387,000	28,600	3.063
June	366,582	369,800	25,500	3.063
July	355,782	362,400	18,900	3.063
Aug.	384,432	387,700	15,600	3.063
Sept.	366,362	367,400	14,500	3.063
Oct.	396,929		15,300	3.475
Nov.				3.50
Dec.				

New uses for kraft pulp and its products are constantly being found and the heavy and rising rate of demand in recent years has seen new production records established in each year since the early 1930's. The volume of output in 1940 was approximately three times as great as in the year 1934, and another new high of more than 4,000,000 tons was reached in 1941. We are also importing rather sizable quantities of kraft pulp from Canada, but the United States still feels the lack of imports from the Scandinavian countries which prior to the spring of 1940 represented one of our chief sources of supply. In late 1940 the price structure for sulphate pulp was stabilized thru the voluntary cooperation of the industry acting with the OPA. Contract prices for kraft have shown no change for more than a year.

1942 PROSPECTS—A new peak in both production and consumption is indicated during the coming year. Stocks at the beginning of the year were at the lowest point in about six years, and with government and civilian use unusually heavy, a short supply situation is indicated for 1942.

SULPHITE PULP

Radical changes have taken place in the statistical trend of sulphite pulp since the beginning of the war. In pre-war days United States was dependent upon foreign sources for a large portion of its total supply. The capitulation of the Scandinavian countries and the complete stoppage of imports from that area since the summer of 1940 have necessarily made United States dependent upon domestic production plus imports from Canada. Domestic output has been upward since early 1940 and a new production record was established in 1941. Imports from Canada during 1941 reached the highest total in recent years, and yet available supplies at the end of the year had been reduced almost to the vanishing point.

1942 PROSPECTS—Major producers during 1941 were engaged in enlarging plant capacity. A new production record is indicated in 1942 based on the highest rate of domestic output ever known plus a continued huge volume of imports from Canada. Nevertheless, the indicated increase in consumption as compared with 1941 will be instrumental in maintaining a tight supply situation for the greater part of the year.

Highest Annual Production—2,775,000 tons (est.) in 1941
Highest Price—$14.00 in 1920
Lowest Price—$1.75 in 1932

	PRODUCTION (Short tons)	CONSUMPTION (Short tons)	End of Period STOCKS AT MILLS— (short tons)	PRICE BLEACHED SULPHITE cwt.
1934	1,446,044	1,418,070	63,097	$2.85
1935	1,579,567	1,595,783	46,881	2.668
1936	1,821,842	1,822,534	46,189	2.90
1937	2,170,000	2,099,407	116,782	3.791
1938	1,649,930	1,674,507	92,205	3.008
1939	1,969,760	1,983,107	77,600	2.582
1940	2,584,987	2,585,900	77,700	3.642
1941				
Jan.	225,486	223,200	80,100	3.80
Feb.	203,113	214,000	69,200	3.80
Mar.	237,479	242,600	64,000	3.80
Apr.	238,546	242,100	60,400	3.80
May	244,139	248,000	56,600	3.80
June	239,636	241,400	54,800	3.80
July	235,400	247,000	43,100	3.80
Aug.	247,231	252,400	38,000	3.80
Sept.	240,272	240,600	37,600	3.80
Oct.	363,129		38,700	4.21
Nov.				4.24
Dec.				

TIN

Highest Annual Imports—310,500,000 lbs. (est.) in 1941
Highest Price—$1.00 per lb. in 1918
Lowest Price—18.35c per lb. in 1932

	PRODUCTION U. S. Imports (000 omitted) lbs.	CONSUMPTION U. S. Deliveries (gross tons)	STOCKS U. S. Visible Supply (gross tons)	PRICE Straits, lb. N. Y.
1929	195,165	89,110	2,820	$.4519
1930	180,844	78,225	4,693	.317
1931	147,984	63,450	6,254	.2447
1932	77,995	36,320	4,496	.2201
1933	140,766	57,815	7,504	.3912
1934	89,568	46,215	2,638	.5216
1935	143,938	65,280	2,312	.504
1936	170,305	74,005	5,095	.4626
1937	197,377	83,660	6,385	.5424
1938	111,329	50,660	5,157	.4226
1939	157,029	71,926	3,302	.502
1940	279,575	112,497	9,179	.4982
1941				
Jan.	27,004	12,760	9,442	.5016
Feb.	22,034	12,195	7,489	.514
Mar.	31,127	16,092	5,195	.5205
Apr.	34,152	13,955	5,016	.5196
May	29,254	10,490	7,205	.5216
June	25,877	14,880	2,846	.5267
July	33,073	12,575	5,864	.5335
Aug.	25,928	13,625	2,393	.5237
Sept.	27,319	12,715	1,767	.52
Oct.		8,000	1,127	.52
Nov.		8,355	2,186	.52
Dec.				

The volume of importation successfully reached a new all-time peak in 1941, exceeding 300,000,000 pounds. The former high recorded in 1940 was 279,575,365 pounds. In December a basic change materialized as the declaration of war with Japan automatically disrupts the normal channels of transportation. This has resulted in government commandeering of all private stocks of tin in the United States. Fortunately thruout 1941 consumers have been able to use reserve stocks and have not found it necessary to negotiate for government supplies. The time is not far distant, however, when consumer reserves will reach a point that will necessitate digging into the government stockpile. The world visible supply has held on a stable basis, but note in the statistical table the extensive decline in visible stocks in the United States.

1942 PROSPECTS—Next year consumption will at least equal the record-breaking volume of 1941, and, under the impetus of government spending, is indeed likely to reach new peaks. Tin is a commodity of foreign origin, and now that a state of warfare exists between the United States and Japan, it is logical to assume that imports will as time goes on fall sharply under the record-breaking levels chronicled in 1940 and 1941. Meanwhile, the price structure will continue on a firm basis reflecting government control and regulations.

TURPENTINE

Highest Annual Production—715,000 bbls. in 1912-13
Highest Price—$2.27 per gal. in 1920
Lowest Price—13¾c in 1938

	PRODUCTION (000 omitted) bbls.	CONSUMPTION (Receipts) bbls.	STOCKS End of Crop year—Jack. Sav. & Pens. bbls.	PRICE per gal. Savannah Calendar Yr.
1928-29 ..	560	343,130	48,396	1929.. $.437
1929-30 ..	625	391,894	40,068	1930.. .362
1930-31 ..	600	385,093	45,232	1931.. .337
1931-32 ..	500	328,099	73,640	1932.. .323
1932-33 ..	450	224,313	63,679	1933.. .354
1933-34 ..	450	258,208	46,010	1934.. .42
1934-35 ..	500	257,679	88,501	1935.. .393
1935-36 ..	510	233,110	114,789	1936.. .329
1936-37 ..	490	205,421	76,986	1937.. .278
1937-38 ..	518	206,613	56,349	1938.. .176
1938-39 ..	534	219,154	109,626	1939.. .194
1939-40 ..	383	124,686	58,369	1940.. .252
1940-41 ..	344	94,420	23,712	1941..
Jan. 1941		3,027	35,421	Jan. .362
Feb.		2,158	33,877	Feb. .328
Mar.		4,682	23,712	Mar. .332
Apr.		6,358	25,022	Apr. .361
May		8,198	27,318	May .368
June		10,044	31,978	June .362
July		8,482	35,617	July .424
Aug.		10,066	34,339	Aug. .617
Sept.		10,755	36,669	Sept. .693
Oct.		10,942	26,389	Oct. .722
Nov.		5,999	18,955	Nov. .699
Dec.				Dec.

Turpentine prices advanced from a low of 17c in June, 1939 to a peak of 75½c in August 1941. This tremendous price advance was the result of a complete absorption of the crop produced during the 1940-41 season as well as the practical disappearance of the stock that was held under the government loan. On August 31, 1939 government holdings of turpentine totaled 191,000 barrels. On November 15, 1941 they amounted to only 7,500 barrels and this was all covered by orders from distributors on previous sales. In two years the expanded domestic consumption plus some lend-lease shipments abroad have resulted in wiping out the turpentine surplus.

1942 PROSPECTS—A tight supply-to-demand position is indicated for the 1942-43 season because the consumption requirements will be drawn entirely from the new crop and there will be no carry-over from the 1941-42 season to increase the supply. The price average for the year 1942 will be the highest in recent years. The government loan rate on turpentine will amount to 55c per bulk gallon, as compared with 30c during 1941. The loan which was announced in early December was below open market quotations of around 65c.

WOOL

Altho the domestic production of wool in 1940 set a new all-time peak, and was followed by a further increase in output in 1941, it was necessary for this country to import huge quantities of foreign-grown wool in order to provide a supply for domestic consuming requirements. Prices advanced sharply during the last half of 1940, and the average range of prices in 1941 was the highest since 1928.

1942 PROSPECTS—A new peak in production and domestic consumption is indicated again in 1942. However, the price rise has been of relatively wide proportions since the beginning of the war, and it is doubtful if government agencies will allow substantially higher prices as compared with the levels prevailing at the close of 1941.

Highest Production—455,500,000 lbs. (est.) in 1941
Highest Price—$1.75 per lb. in 1920
Lowest Price—28c per lb. in 1932

	PRODUCTION Total Shorn and pulled—lbs. (000 omitted)	CONSUMPTION Apparel pounds—(000 omitted)	End of Period STOCKS Apparel pounds—(000 omitted)	PRICE Clothing per. lb. Boston
1934	430,829	167,600	169,999	$.7355
1935	430,700	303,893	113,337	.6425
1936	426,527	278,088	129,204	.8316
1937	432,809	248,227	118,115	.8836
1938	436,510	219,565	115,655	.5907
1939	441,897	293,083	109,533	.7229
1940	449,763	310,021	142,152	.8399
1941	455,500 (est.)		QUARTERLY	
Jan.		40,115	1st	.958
Feb.		36,232	Quarter	.96
Mar.		39,416	164,331	.945
Apr.		46,970	2nd	.945
May		41,032	Quarter	.95
June		41,904	208,345	.95
July		46,750	3rd	.947
Aug.		39,824	Quarter	.94
Sept.		42,856	188,493	.955
Oct.				.97
Nov.				.995

ZINC

Highest Annual Production—860,000 tons in 1941 (est.)
Highest Price—27½c per lb. in 1915
Lowest Price—2.67c per lb. in 1932

	PRODUCTION U. S. Slab (tons)	CONSUMPTION Deliveries (tons)	End of Yr. STOCKS (tons)	PRICE Prime Western pr. lb. N. Y.
1929	631,601	602,601	75,430	$.0684
1930	504,463	436,275	143,618	.0491
1931	300,738	314,514	129,842	.0399
1932	213,531	218,517	124,856	.0325
1933	324,705	344,001	105,560	.044
1934	366,933	352,663	119,830	.0451
1935	431,499	465,746	83,758	.0469
1936	523,166	561,969	44,955	.0528
1937	589,619	569,241	65,333	.0687
1938	456,990	395,554	126,769	.0499
1939	538,198	598,972	65,995	.0551
1940	706,100*	762,780*	17,582*	.0673
1941				
Jan.	66,121	68,844	14,859	.0764
Feb.	61,603	65,818	10,644	.0764
Mar.	70,341	67,640	13,345	.0764
Apr.	68,543	70,414	11,474	.0764
May	73,449	73,090	11,833	.0764
June	70,837	71,569	11,101	.0764
July	74,641	71,894	13,848	.0764
Aug.	75,524	71,403	17,969	.0764
Sept.	73,225	71,767	19,427	.0764
Oct.	75,980	73,813	21,594	.0838
Nov.	74,710	73,122	23,182	.0864
Dec.				

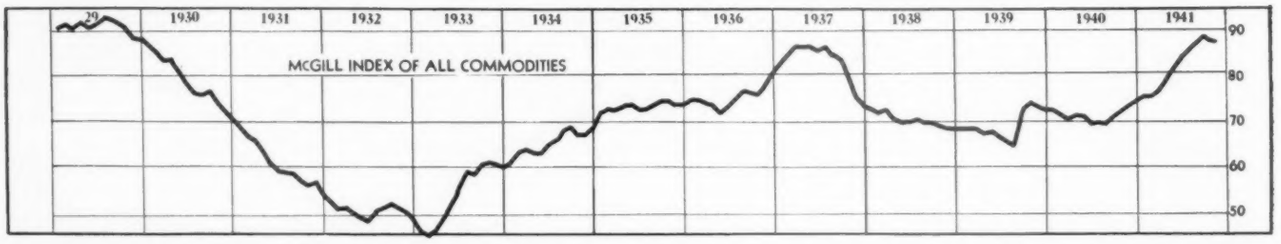
(*) 1940 and 1941 not comparable with previous years.

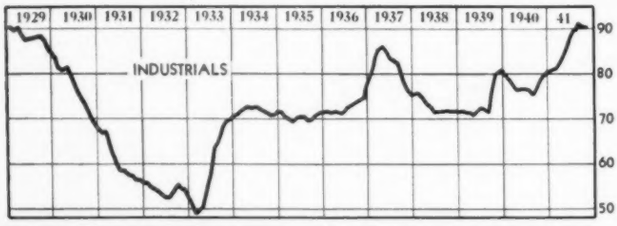
Obviously, there will be no let-down in the record-breaking demand for zinc for an indefinite period. Production in November 1941 was 74,710 tons which was slightly below a new record high of 75,980 tons produced in October of this year, and compares with 61,502 tons in November 1940. The first eleven-month aggregate output reached 784,974 tons which represents a 23% increase over the 640,746 tons produced a year earlier. Total production in 1941 reached a new all-time high of approximately 860,000 tons. Deliveries for the eleven-month period under the policy of priority and allocation totaled 779,374 tons as compared with 692,510 in the corresponding period of 1940. Stocks increased during the summer and fall period but still the December 1 figure is only a fraction of the normal complement. The backlog of unfilled orders on December 1 was 84,101 tons as compared with 125,182 tons at the beginning of the year. This is somewhat meaningless because sellers could swell this total on a tremendous scale if they so desire.

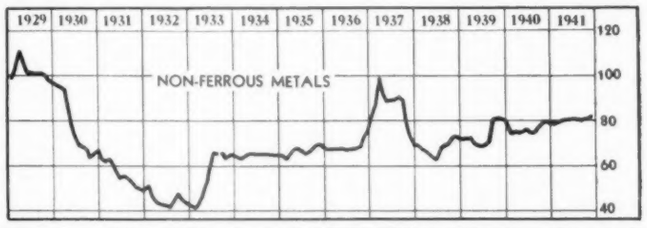
1942 PROSPECTS—The price mark-up in early October in zinc is bound to have some stimulating effect upon production, but domestic output cannot possibly expand sufficiently to make much of a dent in the current deficit. Even less quantities of zinc will be available for civilian use as 1942 progresses. Meanwhile, prices will be firmly maintained at ceiling levels.

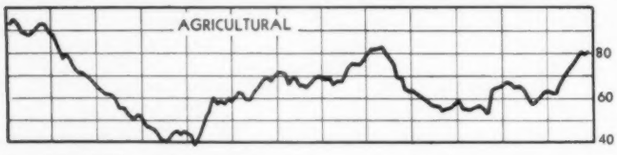
MORE→

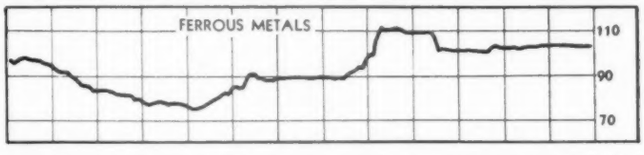
A HISTORY OF INDUSTRIAL PRICES THROUGH DEPRESSION AND INTO WAR

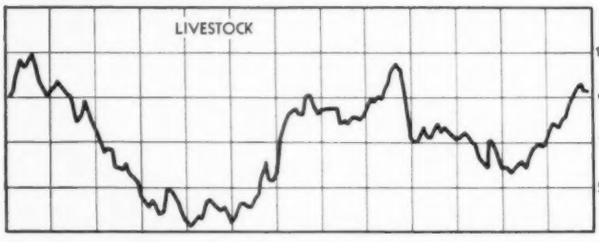


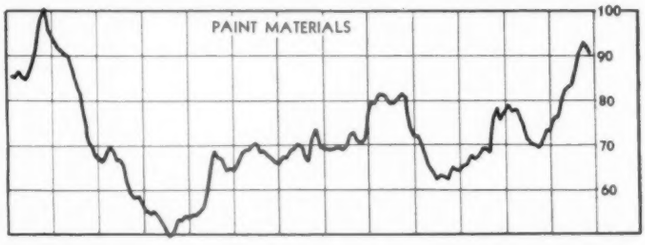


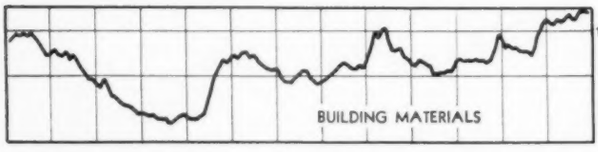


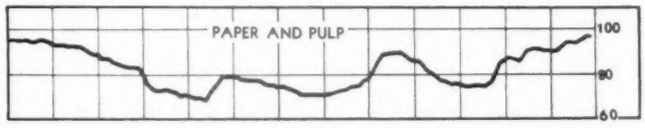


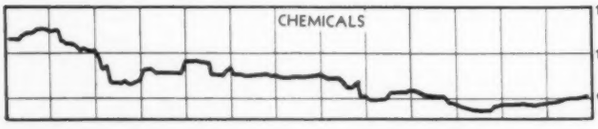


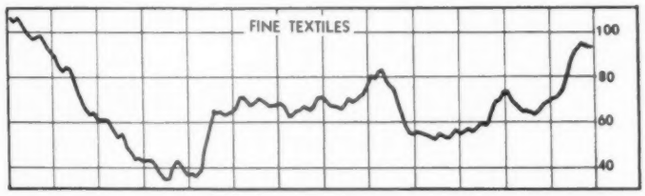


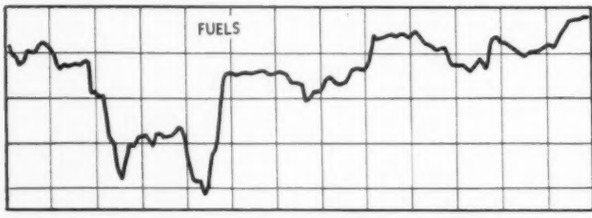


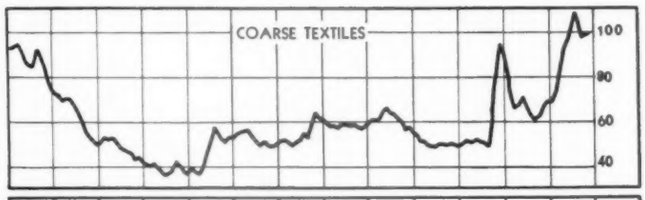


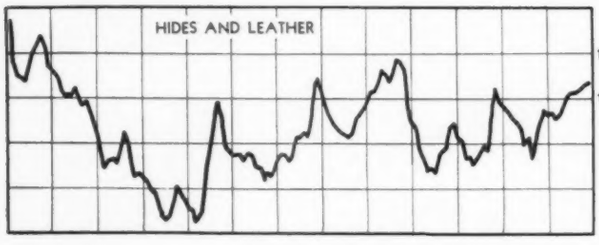


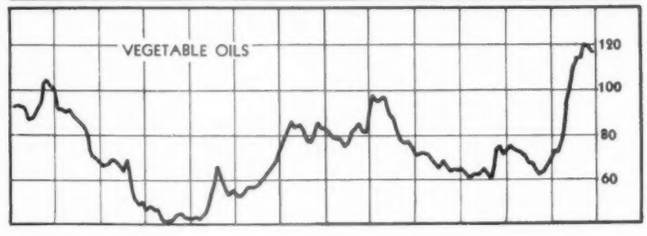












No Rain Checks

By CHARLES FORD

We're in a war now, to the finish, and the Purchasing Agent can not afford to miss any opportunities

A YOUNG fellow I knew, who had considerable promise in the way of writing and drawing, got himself a job with one of the old-time advertising agents who really had something on the ball.

He was assigned a cubicle. It had a door that would shut, a big roomy desk properly provided with drawers he could pull out and anchor his feet on, a comfortable chair for working, and a still more comfortable one for loafing. But on top of the desk, supported by a pair of bronze book-ends, was a neat row of about a dozen books.

His new boss remarked to him: "This place is yours. You can leave yourself wide open to the world or you can shut everybody out. When the door is closed, it's nobody's business except mine what you are doing, and if I want to get in I'll knock. Doing the kind of work we do here, a man needs to be by himself when he feels like it, and nobody's going to ask you how you are putting in your time.

"See those books? The usual Thesaurus, a couple of handy dictionaries, Shakespeare, a Bible and concordance, and Emerson's essays and poems. Every new man hoists his eyebrows and asks what the blazes an advertising man has to do with Emerson. I'll tell you.

"Everybody, when he's writing copy, gets stuck on a dead center at times. I do frequently. When I get that way, I light the old pipe and park myself on the small of my back in a comfortable chair like that one. I have the same books on my desk. One gets into the chair with me, and I turn over the leaves, read a little here and there, and presently I find something

that acts like a gentle rain on a dry lawn. An hour with Emerson sure does help me unkink tangled ideas. I've tried this on every man that has come in here to work—sometimes successfully, sometimes not—but I advise you to try it."

By a miracle of condensation, Emerson put the whole of his "Works and Days" essay into the noble little poem:

Daughters of Time, the hypocritic Days,
Muffled and dumb like barefoot dervishes,
And marching single in an endless file,
Bring diadems and fagots in their hands.
To each they offer gifts after his will,
Bread, kingdom, stars, and sky that holds them all.
I, in my pleached garden, watched the pomp,
Forgot my morning wishes, hastily
Took a few herbs and apples, and the Day
Turned and departed silent. I, too late,
Under her solemn fillet saw the scorn.

Fearing that the average Purchasing Agent is little addicted to Emerson in these days of comic strips and baseball scores—for his benefit, here is Izzy Fineburg's paraphrase of the same idea:

"Ford, these guys what could have it a job to do today, and don't do it, but goes to the ball game, they mostly never get themselves the job done. The next day it's some other day, and they ain't no rain checks."

Plenty of Warnings

If a Purchasing Agent is the real article, blown-in-the-glass, the smallest part of his job is buying. Nine-tenths of his requisitions, in number, can be handled by a good assistant, and it's good for the assistant.

Some twenty-odd years ago, we had a war on our hands. A few of us learned something of what wars do to business, and some of us haven't forgotten. The generation that has sprung up since then knows only by hearsay and horse sense, and by the little foretaste we have had in the defense program, about the complications and disturbance of values and supply such an upheaval can cause.

I said that the least of a purchasing job is the actual buying. This is true even in peace times. Now with a war on our hands, that has spread like a plague over the whole face of the world, infesting even the blue sky overhead and the waters under the earth, what is going to happen to commodities? It is a faithful saying, and worthy of all acceptation, that war blows hell out of the commodity list.

Sure we saw it coming. Here we were, before we got into the actual scrap, scraping our kitchens and basements and garages and dumps for discarded aluminum because we suddenly discovered we couldn't make enough of the metal to keep us going. Trying to make rubber out of coal tar and jimson weeds and second-hand corrugated boxes because we didn't know how soon the supply would be used up, or gobbled by the wily Oriental. Wood pulp is useful for explosives; there may be a real market scarcity of comic strips and sporting pages. Because the TNT foundries began to take a lot of pulp intended for rayon, the girls may have to wear 'em scantier than ever and the scenery will be worse or better according to your notion. If the government keeps on grabbing off the basic materials for dyes, Jones Beach next summer will look like a Quaker meeting.

Tin, lead, copper, steel, aluminum, chemicals, wood pulp—these furnish a devils's list of problems for the Purchasing Agent, and it's only the beginning.

It is one thing to have sensed the symptoms of all this a long time ago, and to have prepared, as far as possible, the preventive remedies. It is quite another to have relied on rain checks, so that you have to try to cope with the resultant problems now that we are actually confronted with them. There ain't no rain checks for the days and weeks and months lost by failure to think things out to a logical conclusion while the yen for war on the part of Huns, Wops, Japs and Russkoes was still merely flatulant. It was tough enough for those who had been through the previous mess and sent up storm warnings. But for those who were thinking about breaking 100 on the golf course when they ought to have been breaking down the boss's crust—there is a war on, which is very sad news.

My friend, Izzy Fineburg, who specalizes in junk, got his brainstorm a couple of years ago, and walked into his bank one day to stick 'em up for a loan. Ordinarily, Izzy has potatoes enough to choke a herd of hungry hippopotami; but even after he had assessed all his relatives there was still a deficit, not enough for what he planned to do. He didn't want to tip his hand entirely to the banker, so he got about half of what he wanted.

Therefore, Izzy wired a dozen of his junk-minded contemporaries in different parts of the country to meet him in New York. Behind closed doors, with every one sworn to secrecy, Izzy unfolded his tale. It was simply this: to pool their resources, borrowed, begged or stolen, and buy up all the metals they could find lying around loose, yard them, and feed them out discreetly where they would do the most good. It was a frost. Every mother's son of them had very, very cold feet. They figures a dollar in the sock was worth a hundred in aluminum behind a fence.

So Mr. Izzy went it alone, as far as his roll would take him; and even at that, what the government won't do to him on his income tax is nobody's business.

Take the Initiative

I have always figured it the major part of a purchasing job to know, as far as possible, what has gone on, what is going on, and what is likely to go on. It takes study, reading, investigation and travel; and a stern determination not to add up the sum on a basis of two and two making five.

It takes foresight and imagination—of the right kind. It takes courage, and a stiff upper lip in the private office. The boss will fight you on general principles, if only to find out if you know what you're talking about and have the courage of your convictions. But if he's a wise boss, and not a stuffed shirt, he will give in when he's shown. But the boss has the authority and the cash box, so he is always a problem of the Purchasing Agent.

Purchasing isn't a day-to-day affair, not by a damn' sight. It's a long range engagement, calling for the grand strategy. The Purchasing Agent who isn't ahead of his boss and his organization by more than a hop, skip and jump in these parlous times doesn't rate any rain checks for the chances he misses.

Being on the defensive is costly business for a Purchasing Agent now. His job is to take the offensive and hold it, to get the jump on every situation possible. And if he's studied anything in the newspapers besides the comic strips during the last five years he ought to know when, where and how to hit.

If he doesn't—well, it's a great game, and no rain checks.

BLACKOUT MATERIALS

British factories have developed effective means for the protective black-out without sacrificing good working conditions in their plants

ON Tuesday, December 9th, the day following our declaration of war against the Japanese Empire, when the air raid sirens wailed the first warning signals along our Atlantic and Pacific seaboards and the scourge which "couldn't happen here" seemed about to become a reality, the wholesale textile markets were swamped with an unprecedented volume of rush orders for black cloth as industrial plants, office buildings and home owners clamored for black-out material. By Wednesday morning, the reports showed that immediate stocks were practically exhausted, delivery promises hopelessly deferred. It was a natural reaction. Relatively few plants had made definite provision for this accessory of wartime operation. Blackouts were being ordered by military authorities and civilian defense officers in large areas and the condition seemed certain to be quickly extended. A very real problem and a very real shortage had come into existence almost simultaneously.

But as a matter of fact, that particular shortage is not as serious as it seems at first glance. For black cloth—the first and obvious thought of many who were facing the black-out problem—is certainly not the only answer to this need. Nor is it the best answer, if we are to accept the experience of the British who have been coping with this situation in very practical fashion for more than two years. This is another instance when the proper start for a procurement program is the use specification rather than the material specification. The studies and experience of British purchasers should be of extreme interest and value to American Purchasing Agents today.

Painting a Black-out

There are four general types of window treatment suitable in meeting the air raid emergency—solid shutters, available only to a limited extent and chiefly on old-type buildings; painting out, curtaining, and paper screens, all of which can be adapted to factory construction and which have been reasonably successful as far as the black-out itself is concerned. One of the things which the British have learned, however, is that opacity is not the only factor to be considered.

Painting out window panes with opaque paint is a quick, positive and permanent method of preventing light leakage. To make it effective in case of an alarm, it is necessary only to be sure that all windows are tightly closed. It does present a problem of constant maintenance to guard against chipping, peeling and flaking which would result in light leaks, and this is not altogether a simple operation for the inspection must be done from the outside, after dark.

The chief disadvantage of this method, however, lies in the identical characteristic which is its chief advantage—permanence. For painting out the windows permanently excludes daylight just as it imprisons the factory lighting—from side windows, skylights, monitor and saw-tooth roofs. Artificial illumination can of course compensate for this daylight deficiency, but at a continuing cost for additional current and bulb replacement after the initial expense of painting has been incurred. And in plants which have been designed for and geared to normal daylight operation, there are reports of substantially decreased output and less accuracy when working under the new conditions.

The latter deficiency is not altogether a matter of illumination. It has been quite definitely attributed to the psychological factor of having the workers constantly and permanently reminded of the potential danger. The natural effect of this is a depressed mental attitude, which shows itself in decreased work efficiency and in a sharp rise of absences due to minor illnesses.

Both problems—illumination and psychology—can be solved to some extent by having the interior coat of paint in some light color of high light reflecting quality, which will at the same time raise the general level of illumination and produce a more cheerful appearance. Another practical course is to confine this black-out method to windows which are in inaccessible locations or otherwise difficult to treat because of design or construction, and to adopt some other method for the general black-out treatment.

In office buildings and similar locations which are normally equipped with permanent opaque roller curtains, it has been found effective to paint out an eight inch strip around the edges of the window panes, thus creating a light trap which prevents leakage at the edges, for ordinary roller shades do not fit tightly enough to obscure these joinings although the main window area is well screened.

Curtaining

Curtaining the windows has the very definite advantage that such curtains can be quickly drawn to effect the black-out, and can be as promptly opened when the need has passed. Textiles are adaptable to various convenient types of installation to fit particular conditions—roller shades, either of the spring type, or those

which drop into position of their own weight and are manually returned; or the drapery type which is drawn across the window. In practically all cases, these installations can be arranged so that the curtaining is returned to small space when not in use, so that it is quite inconspicuous, does not interfere with normal lighting, and is constantly in position, ready for instant use as the need arises.

Opacity of the curtaining material is a fundamental consideration. It is relatively simple to seal the edges and joinings against light leakage by using continuous pieces of material wherever practicable, by providing ample overlap on all sides of the window and where two curtains come together (9 inches minimum overlap is recommended), and by using "light traps" or box enclosures around the edges. But much of the effectiveness of course depends on the material itself. The weaving process produces a mesh structure of material which normally permits the passage of more or less light except in heavy and closely woven materials, double-woven materials, or those which are specially treated by filling or coating. Filled textiles are subject to pinholing or cracking, and such failures—which would not normally impair the practical usefulness of the material—must be closely watched for purposes of a total black-out.

In the present emergency, and on the scale required for large buildings and for the large window areas of modern factories, these special fabrics may be prohibitive in cost if, indeed, they are available in sufficient quantity. Consequently the problem is one of adapting black cloths which are not basically intended for the purpose and not altogether suitable. One answer to this is to use the material in heavy folds or in a double thickness, which automatically multiplies the cost, but which has been quite effective in reducing leakage of light through the fabric itself. The important thing is to make a positive test of the proposed installation for its opaque qualities. Otherwise the basic purpose is not fulfilled.

Paper Screens

A black-out method that has been widely and effectively adopted in British plants is the use of paper screens. As in the case of curtaining, the material itself is the first consideration. It must be thoroughly opaque, tough and durable to stand up under severe handling, and have a degree of pliability comparable to that of a textile for some types of installation. These qualities are found in building and protective papers of the Sisalkraft type—tough kraft with a layer of asphalt and preferably with fiber reinforcement. While the initial applications may have been dictated by considerations of low cost and availability of the material, the continued and increasing use of this method attests to its effectiveness for the purpose. Such papers have been officially endorsed for black-out use in Great Britain by the Air Ministry, War Office, Admiralty, H. M. Office of Works, Ministry of Mines, Miners Welfare Committee, and the Ministry of Home Security.

Some of these papers are sufficiently pliable to be used as roller blinds, usually with the top edge permanently secured, while the length of paper rolls down into position by being wound on a round or oval wooden bar, and is rolled back into position manually. A variation of this is to fold the material in the familiar accordion pleat ("concertina fold" is the British equivalent) with reinforcements of thin wooden slats. The folded paper screen normally lies at the bottom of the window and is raised into position by means of cords over pulleys, returning by gravity when the need has passed. Long runs of such screens can be ganged for simultaneous operation by a single operator. This latter type of installation has not been widely advocated in this country, but has served well in some British plants. The same precautions as to overlap at edges and joinings, and light traps around the window, apply as in the case of cloth curtains.

Simplest method of installation for large window areas is the use of rigid screens, in which the paper is mounted on light wooden frames which can be lifted into position and hung on battens or hooks provided for the purpose. The screen units are light in weight and easy to handle even in large sizes (the paper is available in standard rolls up to 7 feet in width) and an overlapping fillet on the edge of the frame seals the joint between screens against the passage of light.

Use of this method requires a space for storage of the screens when not in use, close to the windows for which they are intended, so that they may be instantly available. Putting them up and taking them down is necessarily a manual operation, but a simple and speedy one. With proper organization and drill, which are necessary with any type of black-out equipment, this procedure comes well within the limits of time provided by air alarms and required by defense authorities. Special advantages are the low cost, which may run as low as 1¼ to 1½ cents per square foot; the absence of interference with normal lighting when not in use; good light-reflecting qualities when in position (up to 70% for light kraft); and a minimum of adverse psychological effect because of the two previous factors.

Where one-third to one-half of the window area can be sacrificed in special locations, such as high windows, corridors, staircases, and the like, a semi-permanent installation of hinged, folding wing shutters has been found practicable and convenient. The basis construction—paper mounted on light wooden frames to fit the window—is the same as is the rigid screen. As suggested in the section on painted black-out, the complete black-out program may well combine various types of screening adapted to the particular problem.

Further Developments

Research and experiment is still in progress to improve the methods and materials for black-out. It is being given serious consideration in the design of the extensive new plant construction now in progress in vulnerable areas. Some companies, due to the nature of their operations, are particularly concerned with finding a fire-proof or fire-resistant material for their black-out screens which will be consistent with fireproof building construction and yet will meet the requirements of this problem. But the problem is not one which can wait on such research; it is an immediate, emergency need, which must be met with materials which are known and which are available, applied in ways which have proved their efficacy.

Furthermore, it is, we hope, a temporary emergency. While any necessary expense is wholly justifiable to provide the required protection now, prudent consideration suggests a minimum of permanent capital expenditure in attaining these results.

The experience of British industry under fire, in arriving at a practical, effective and economical answer to the black-out requirement, and in maintaining efficient working conditions while giving their plants this essential protection, should be a valuable guide to Purchasing Agents in this country in meeting a similar emergency.

CONSERVE COPPER

WITH copper production in this country and in Latin America at all-time high rates, an aggregate total volume of new copper available in 1942 is estimated at 1,700,000 tons minimum, and may exceed that figure by 10% or 12%. The minimum figure takes into consideration expanded output by present active producers, Government-subsidized output by high-cost mines, and an estimated 100,000 tons of secondary copper. It does not include a substantial tonnage of privately held stocks on hand.

War demands under the Defense Program were estimated at 1,000,000 tons, approximately equal to primary domestic production. Minimum requirements of essential civilian services, such as power and communication, are set at 250,000 tons, leaving 450,000 tons for "non-essential" users who would normally take 800,000 tons. This prospective deficit was brought into approximaate balance by the Conservation Orders which eliminated the use of copper in more than a hundred specified products, restricted all others to a percentage of 1940 base consumption, and drastically reduced automobile output.

Revised estimates of war demands under the Victory Program indicate that a minimum of 250,000 tons additional will be asked for arms production, directly and indirectly, during 1942. This obviously points to further restrictions in non-essential civilian uses, with even the most favorable conditions of supply. Limitations on use and allocation of available supplies will presumably govern the flow of this metal into channels indicated by the best national interest.

Meanwhile there is a distinct responsibility for conservation and efficient use of supplies by every manufacturer and user, whether for arms or civilian use.

I. LIMITATION OF USE

Mandatory Limitation. Conservation Order M-9-c, issued by the Priorities Division, OPM, on October 21, and amended November 1, prohibits the use of copper (except for non-decorative plating) after January 1, 1942, in a list of more than 100 civilian articles under seven general categories: building supplies and hardware; house furnishings and equipment; dress accessories; jewelry, gifts and novelties; burial equipment; automotive, trailer and tractor equipment; and a miscellaneous list which runs from fire-fighting apparatus to toys. The amended order also includes the use of copper sheet, strip and screen in building construction, which was originally prohibited as of November 1, 1941.

All other uses of copper and copper base alloy, per quarter, are restricted as follows, whichever is greater: (1) 70% of consumption in the last quarter of 1940; (2) 17½% of total consumption in 1940; or (3) 50% of consumption in the third quarter of 1941. This is in addition to copper and brass used in the manufacture of products permitted under the exceptions, listed below.

Manufacturers' inventories of copper and brass (including scrap, raw materials, semi-processed materials, finished parts and sub-assemblies) are limited to the "minimum practicable working inventory"—in no event to exceed an amount of materials necessary to maintain operations for sixty days.

Exceptions. Restrictions do not apply to (1) Army, Navy, Lend Lease or other Government defense agency contracts where the use of copper is specified; (2) products covered by underwriters' or other safety regulations in effect October 1, 1941; (3) electrical conductors; (4) chemical plants where corrosive action makes other materials impractical; (5) research laboratories and hospitals; (6) condenser and heat exchanger tubes and tube plates in steam generating plants and oil refineries; (7) motive, mechanical and electrical equipment of vessels other than pleasure craft; (8) repair and replacement purposes in chemical process industries and food processing plants; (9) insecticides and fungicides.

Voluntary Limitation. The use of substitutes is urged, wherever other materials are practical for the intended purpose. Substitutes developed to replace copper and brass in the portion of production eliminated by the Conservation Order should be extended to the entire manufacturing program. Ornamental uses and traditional "bright work" should be eliminated. To the extent that products are truly non-essential—and the manufacturer knows this better than his customers—production should be converted to essential uses as quickly as practical; useful application of materials and production facilities is conservation.

II. DESIGN AND FABRICATION

Check design to eliminate excess weights of metal. Excess weight used in an essential product is as wasteful as the manufacture of a non-essential product. You may conserve by buying less original material or by producing more recoverable scrap.

Use strip metal instead of solid or cast wherever practical, and use the strip in lighter gauges if adequate for the purpose.

To produce less waste in cutting off, materials should be sheared rather than sawed, and sawed rather

than cut off in lathes. Band saws can be used, or old milling machines converted into rotary saws.

Protect copper and brass surfaces against corrosion and erosion.

Change from solid castings or rods to base metal foundations which can be coated with copper by plating or metallizing.

Use baser alloys, containing less copper.

III. SALVAGE

Salvage is better than scrap. Place shop foremen and superintendents, and buyers, on the alert to watch for such opportunities. If the operation is large enough, a special salvage department giving its entire attention and initiative to this feature, and kept in constant touch with all requirements and production orders, will contribute many ideas and savings.

Rod ends from automatics often can be fabricated in hand screw machines or lathes into the same products made by the automatics. This practice, formerly overlooked because of the additional cost, may now be practicable, particularly if it can be subcontracted. Check additional costs against the recovery from selling such material as scrap.

Heavy scrap from punch presses often can be repunched into smaller needed parts. This usually requires slower types of presses than are to be found other than in a salvage department.

Subcontract the salvaging. Many processes such as the above, and other machining operations to utilize salvage material can be subcontracted to smaller shops whose equipment is better suited to the slower production speeds, or who have the equipment but can obtain no other materials to work on.

Copper and brass anodes for electroplating can be made by pressing heavy scrap into tight bales of suitable sizes. This not only directly utilizes the scrap material, but may assist in further conservation by plating parts instead of using solid copper or brass.

Copper wire with worn insulation can be reinsulated by dipping into insulating varnish. A more elaborate process salvages short ends by coupling or welding into a continuous wire, stripping off the insulation with knives or dies, and shipping to the wire mills in coils of not less than 300 pounds.

Old wire can be made available as usable scrap by burning off the insulation.

Exchange or sale of salvage material between manufacturers may assist in fuller utilization of the metal, fabrication of useful parts by the manufacturer who does not produce the waste ends, etc., or may speed the accumulation of one kind of scrap at one spot for prompt carload shipment to the mills.

Keep in touch with mill representatives for new methods of salvaging brass and copper, as much research is being devoted to this subject and new developments are rapidly appearing.

IV. SCRAP PREPARATION

Most brass and copper scrap comes from production lines, but there is much incidental scrap available from dismantling of equipment, rewiring of electrical systems, etc. These sources should be investigated now.

Segregation of different types of scrap is essential for efficient re-use as well as for maximum return. The standard classifications are:

Copper, Plain
Yellow Brass
Best Quality Brass
Red Brass, 80%
Red Brass, 85%
Commercial Bronze, 90%
Commercial Bronze, 95%
Muntz Metal
Naval Brass
Roman Bronze
Manganese Bronze
Herculoy
Phosphor Bronze "A," 5%
Phosphor Bronze "C," 8%
Phosphor Bronze "D" 10%
Phosphor Bronze "E," under 4%
Cupro-Nickel, 20%
Cupro-Nickel, 30%

Scrap from sand castings is not returnable.

In addition to segregation by grades of metal, scrap should be assorted by type—Clean Heavy, Rod Ends, and Clean Turnings. The latter two types may be combined.

Segregation of scrap should begin at the machine, with every precaution to avoid mixing of materials. Particularly if machines are used alternately for brass and copper and for ferrous materials, they should be thoroughly cleaned before running the brass or copper.

Wheelbarrows and other handling equipment used for copper and brass scrap should be used only for this work, to avoid contamination by chips of other metals.

Brass and copper scrap should be shipped loose in cars or in non-returnable containers, depending on the quantity. Baling of scrap should be done only by agreement with the mills to accept such shipments.

Scrap having excessive coatings of oil or grease should be cleaned. This salvages the oil as well as making the scrap more usable. Soluble cutting oils, drawing solutions, etc., can be dried in extractors. Moisture content of 3% is allowed.

Identify all scrap by a statement of the material, the size or type of scrap, and the name of the original maker if possible. Such information, formerly used only as a basis for pricing scrap, is now of additional service in facilitating proper use of the material at the mill.

If scrap becomes mixed with ferrous chips or other material, take it up with the mill. Scrap is too valuable to be discarded now. Some munitions-making operations require the turning of steel and copper together, and the set-up used to handle scrap from such operations (magnetic separators, etc.) may be applied to scrap piles which have been unintentionally mixed.

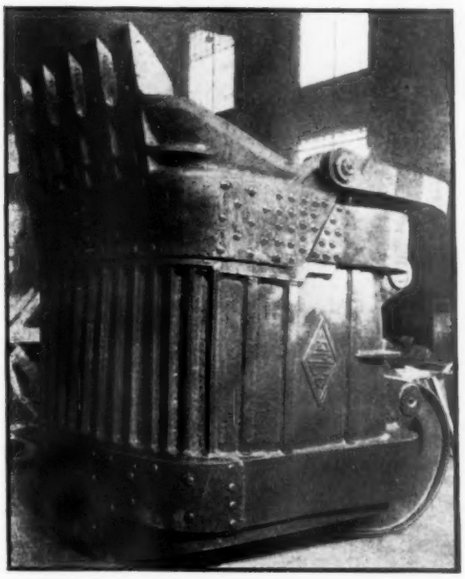
Place responsibility for scrap handling in the hands of reliable personnel. With the 168 hour work week, four or more such scrap managers must be found. Essential qualifications are experience and familiarity with materials, attention to detail, imagination, and honesty. Veteran foremen too old for active shop duty may be ideal for such work.

This is the first of 400 gun carriages being built for the United States Army.

METAL SCRAP
IN THE WARTIME MARKET

By HERBERT E. FLEMING

Methods of R. F. Marsden, Purchasing Agent for the Pettibone Mulliken Corporation, Chicago, charged with selling, salvaging, and buying scrap involved in the production of Army gun carriages, rail crossings for Navy Yards and railroad systems, and welded dippers for manufacturers of steam shovels.



Products like this bucket for strip mining are also vital to the Victory program.

THOROUGH-GOING methods for performing the three-way functions of (1) selling scrap, (2) guiding the salvaging of scrap, and (3) buying scrap, are in use by R. F. Marsden, now and for the past five years Purchasing Agent of the Pettibone Mulliken Corporation at its plant covering 33½ acres of industrial Chicago.

These methods include highly developed physical control and cost accounting control, as well as advanced practices in the actual selling, in steering and aiding the production departments on salvaging, and in the buying of scrap.

R. F. MARSDEN

Mr. Marsden has a tight grip on these three interrelated functions. Their performance is so well in hand that it has readily been modified to meet defense market conditions, the new price ceiling on ferrous scrap, and whatever may come from the SPAB-OPM-OPA revised set up at Washington for controlling the distribution of materials for defense and civilian uses. This modification for the Pettibone Mulliken Corporation has already included a shift from some of the selling of scrap, and also from some of the buying, to a greater emphasis on the utilization and consumption of scrap produced in its own operations.

Mr. Marsden is one of the Purchasing Agents on whom responsibility for selling scrap has been placed with absolute definiteness. It appears that about half of the industrial Purchasing Agents have the responsibility for disposing of waste materials. Many managements, however, evidently believe that the buying type of mind is so congealed that it cannot become temporarily the booster type, even long enough to sell scrap advantageously. Not so with Mr. Marsden. It is up to him to sell, to save, and to buy.

"Each year we sell about 45 cars of scrap, we produce about 30 cars of scrap for our own consumption, and we buy about 175 cars of scrap," said Mr. Marsden when asked for statistics that would give an overall picture of this activity. This scrap work is carried on in connection with the duties involved in purchases for all purposes amounting during a normal year to $1,500,000, and during the past year to $4,000,000.

In the defense production field, the Pettibone Mulliken Corporation has been somewhat in the eye of the public during the past year, chiefly because of a $6,000,000 contract for gun carriages for the Ordnance Department of the United States Army. Chicago daily newspapers some weeks ago contained a photograph showing E. J. Seifert, now president, and other officers of the company presenting to Col. Donald Armstrong, Executive Officer of the Chicago Ordnance District of the War Department, the first 155 millimeter gun carriage to come from its gun-mounting department, in which 300 of its 1,250 employees are engaged.

United States flags and defense slogans are in evidence throughout the plant, which thrills with production endeavor around the clock daily.

This company also produces forgings for the British Purchasing Commission, and for the United States Navy. Besides that, it is making special railroad crossings for Navy yards and Ordnance plants, as well as its standard gauge railroad frogs and crossings for the steam and electric systems. It manufactures welded steel dippers for use on steam shovels in such notable operations as the iron ore mine at Hibbing, Minn.

A further idea of the materials involved in its scrap selling, salvaging and buying operations is given by a bird's-eye view of its departments. These include a forge shop, a rail shop, a steel foundry, and a grinding department—all large; a small gray iron foundry, and a modern metallurgical laboratory. The foundry for steel is said to be the largest manganese steel foundry in the United States.

Scrap Classification

To one who visualizes the materials that go into, and come out of, the production of such departments it will be at once apparent that the scrap which the Pettibone Mulliken Corporation has to sell, to salvage, and to buy, is classed in the field of ferrous specialties.

"With us there is a close tie between the two subjects of producing scrap for our own use and selling scrap for use by others," said Mr. Marsden. "As a result of our manufacturing processes we produce much scrap that we can use in our own foundries, but we also produce much that we have to sell because it is not suitable for our production."

The classification of the kinds of scrap which Mr. Marsden sells is clean cut. Here is the list of things it is up to him to dispose of:

1. Short rail ends.
2. Rail chips.
3. Drop-forge flashings.
4. Short steel turnings and borings.
5. Long machine-shop turnings.
6. Miscellaneous heavy melting steel.
7. Brass borings and clippings.
8. Miscellaneous non-ferrous scrap.

A car of heavy melting steel is accumulated two times a year, but the accumulation and selling of carloads of the first five kinds of ferrous scrap named in this list, and also the non-ferrous, goes on continually.

During 1937 and 1938 the Pettibone Purchasing Agent also had the responsibility of selling used equipment. But in 1939 Mr. Marsden, realizing that virtually whatever the condition of the equipment set aside as obsolete, it would be necessary to recondition and use it, stopped selling the used machines.

Hitherto the paper stock waste from office and plant-clerical operations has been burned. With the new drive on for conserving paper, even the small amount of this sort of waste which this company has to dispose of may become worth selling.

Each of the first six of the kinds of scrap in the above list is segregated, assembled and accumulated by the carload. For this purpose there is, in the salable scrap inventory pile at the northeast corner of the grounds, a bin (and in one case merely a reserved space) for each of these classes of scrap. "All of the scrap we sell requires no additional segregation or preparation after we ship it," said Mr. Marsden.

The respective production departments in which this scrap originates put all of one kind into a self-unloading steel bucket or box, for there is no further preparation at the bins except to remove obvious "foreign bodies," such as milk bottles. An electric lift truck is used in hauling these buckets or boxes to the appropriate bins; and on the way there they are weighed, and the weights recorded.

When the writer recently toured this plant and inspected the scrap arrangements, under the guidance of Mr. Marsden, there was a sizable collection of scrap in each of six open-top wooden-wall bins, three along each side of a railroad switch track. Besides these, at a point further along this track, there was a pile of flashings, or circular and rectangular trimmings, the result of drop-forging, and likened in lay language to the trimmings of pie crust in a home kitchen.

When it comes to loading the cars from these bins and this pile different methods are used for the heavy scrap and the bulky scrap—the latter, like carpenters' wooden curled shavings, being the kind that takes up much space for its weight. The heavy material—short rail ends, flashings, and miscellaneous melting steel—is loaded onto the cars by means of a magnet on a locomotive crane The bulky material—short turnings, long turnings, and rail chips—is loaded with a clamshell bucket on this crane.

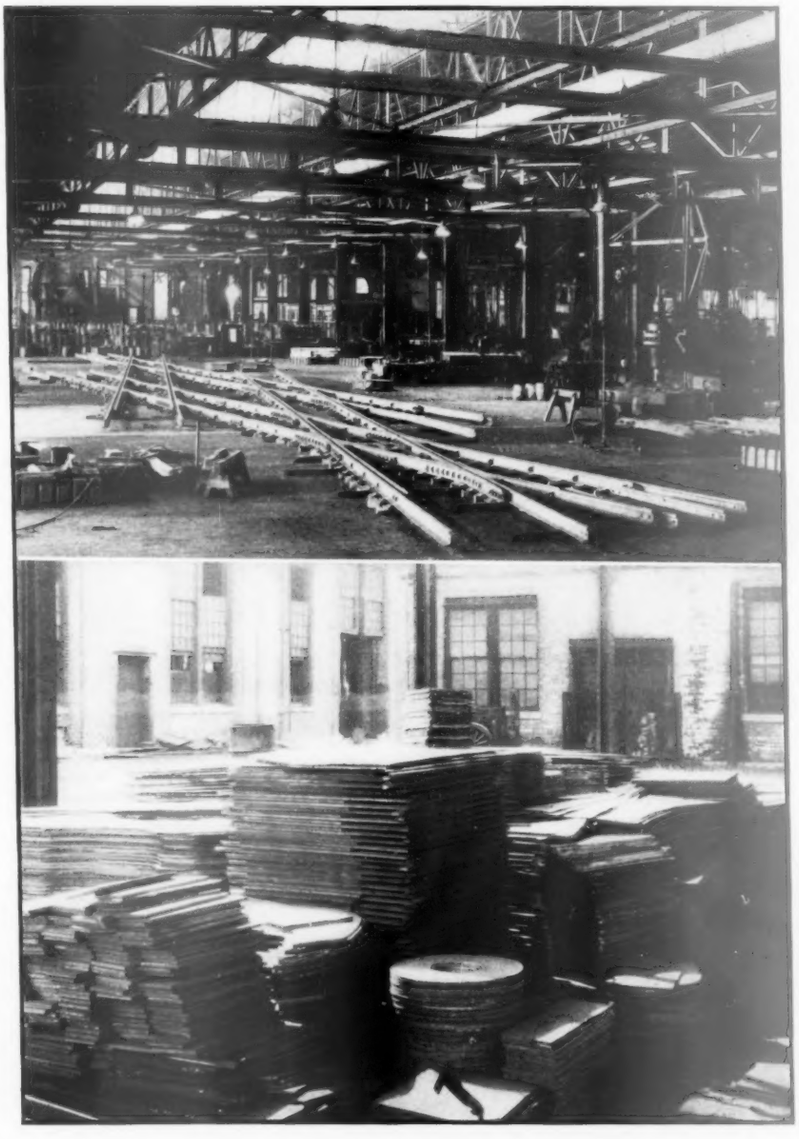
In another bin there was the beginning of an accumulation of wire, crane cables, band-iron, and other odds and ends. Mr. Marsden does not sell this. He lets a junk man have it in return for the labor of taking it away.

"In assembling scrap we take precautions to avoid the inclusion of undesirable materials," he explained. "For example, we produce a small amount of cast iron borings. The amount is too small—about 1,000 pounds a year—to have salable value, but it is large enough to contaminate steel scrap if we did not take measures to prevent that. So what we do is to dump them. By keeping scrap clean, you can get better prices."

The salable brass, aluminum and other non-ferrous scrap is stored in barrels and drums, for easy handling by its purchasers. In these days, when such scrap has begun to approach being "worth its weight in gold," these barrels and drums are kept under lock and key, pending sale.

In the division of duties he has made in administering the purchasing department of the Pettibone Mulliken Corporation, Mr. Marsden personally handles the selling of the scrap, which is carload lot business. He also handles the purchasing of scrap and in fact all carload purchases—these constitute in dollar volume 75% of the company's purchases. To be freed for this he has four assistant buyers: one for shop supplies and small tools; a second, for warehouse steels, bolts and nuts; a third, who besides serving as assistant buyer on LCL purchases, acts as expediter; and a fourth, since November 1940, as buyer of parts for the department manufacturing gun carriages.

"All of our sales of scrap are made to brokers, just as all our purchases of scrap are from them," said Mr. Marsden. "There are eight leading brokers in the Chicago industrial district, and most of them have yards. They are the wholesalers, and through them as brokers our carloads of scrap are shipped to the users.



Much of the scrap produced in fabricating operations can be utilized by the company itself.

Suitable grades of scrap are carefully sorted and stored for future use.

"In some respects scrap brokers are very much like stock and commodity traders. They stick to their word given orally. Verbal agreements to buy or sell are final. All our buying and selling of scrap is done by telephone. When we sell we receive from the broker by mail a written confirmation of his order. On a shipment of scrap we use the regular form, just the same as for any of our shipments of finished products.

"As to prices for scrap, in ordinary times there may be a fluctuation of more than 100% within the period of a year or two. During such times we try to use our best judgment of the market conditions. We might, before accumulation of a carload, sell at a good price for future delivery, or we might, after having a carload assembled, hold it for a better market. But during the current controlled price situation, and in the interests of defense, there is no point in such a policy. Scrap should be turned back into the channels of production as promptly as possible.

"Prior to September 2 there was a scramble over prices due to widespread violations of the government ceilings. Further efforts have been made by government agencies to regulate scrap prices, the success of which is still in question. Likewise it is impossible to predict the full effect of the new order on scrap and its allocation issued on October 9.

"Another point. In normal times we get quotations from the different brokers and sell a given carload of scrap to the one from whom we get the best price, regardless of whether we're buying scrap from him or not. Today there are more buyers of scrap than sellers. Since we are heavy buyers, and prices are controlled by the government, we follow a reciprocity policy. We sell scrap of a given kind to the broker who in turn can and will sell another kind of scrap to us."

Accounting Methods

In crediting producing departments with their scrap that is sold by the Purchasing Agent, a standard-cost system, with adjustments, is used. When salable scrap is moved from a production department, and is weighed on its way to the bins for accumulation for carloading, that department is given credit for the scrap at a fixed standard price. This price is set at the beginning of the year, and it does not fluctuate with the market. On the books the salable scrap account is charged and the department is credited on that basis. Then when the scrap is finally sold, ordinarily at a figure higher than the standard price, the salable scrap account is credited with the value with which it was originally charged on the annually fixed price basis, and the producing department is credited with the difference.

Moreover, even in normal times the Pettibone Mulliken Corporation carries on an extensive activity of "making scrap"—salvaging waste for its own use.

Modern Handling Equipment

"The scrap we produce to be consumed ultimately in our own foundries," Mr. Marsden explained, "is principally plate shearings, punchings, and bar crops. These items are loaded on platforms and moved to a central point by means of electric shop trucks. When we've accumulated enough platform loads to cover a railroad flat car, the platforms as originally loaded are placed on such a car and hauled by a locomotive crane, with which we do our yard switching, to our track scales and then to our large manganese steel foundry."

There, a mechanical operation that, to the lay observer looks to be almost human, takes place. After these flat cars of scrap are hauled into a track next to a brick wall 12 feet high and 120 feet long, the boundary of a "bin" that long and 40 feet wide and roof high, a giant magnet, 4½ feet in diameter, swinging from an overhead crane, noses over the scrap on each flat car, sorts it and unloads it into piles over the wall. Later it sorts it from the piles into long troughs, and lifts trough-loads of scrap into a furnace for melting.

For the charges and credits on these transfers of scrap from production departments to the manganese steel foundry, annual standard prices, like those for the salable scrap described above, are not used. Because all of the scrap going to the foundry is sent to it on a flat car that can be weighed on the track scale on the day of the transfer, the producing department can be credited and the foundry charged at the market price prevailing on that day.

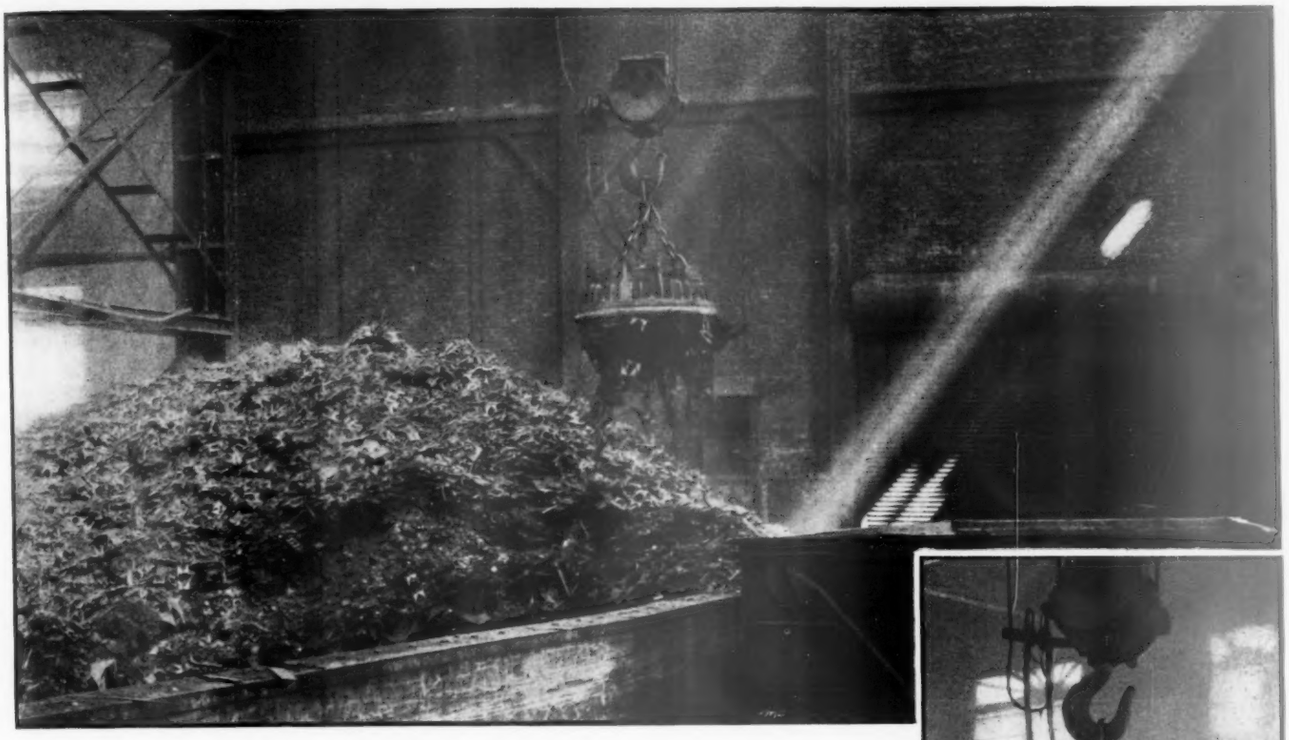
An inexpensive and simple, but comprehensive and adequate, mimeograph form is used in the paper work in connection with either scrap to be sold to brokers or to be delivered, be it to the foundry, or to one department from another, or to the general stores. This is headed, "Departmental Scrap Transfer." It calls for a check mark to show whether the transfer is to the yard as salable scrap, to the foundry, to a department designated by number, or to the General Stores Department. It has spaces to designate the kind of scrap, its weight, value per pound, and total value. It calls for entering the number of the transferring department, and signatures by the transferer and the transferee.

Waste Prevention

In connection both with the sale of scrap and the making of scrap for its own use, the company has been taking special steps to avoid waste and to conserve materials. Mr. Marsden said: "As a result of the tight scrap situation we are diverting more salable scrap to our own use. At the same time, due to the difficulty of obtaining new steel, we are setting aside more of our plate shearings and bar crops for further use, instead of sending them to the scrap pile as we would do in normal times."

Commenting on the urge for waste prevention in the emergency, Mr. Marsden made a shrewd observation on the shift in relations between available scrap and available labor. He said: "Ordinarily, when all factors are more even, you can get more scrap and less labor for a dollar. Today, with the great defense demand for materials, you can get less scrap and more labor. This is so, notwithstanding the great increase in employment." Then he gave an illustration of the effect, saying: "Consequently we have found it expedient to change the specifications on dimensions of plates and bars. These call for larger plates and longer bars, to reduce the number of crop ends, even at the higher handling costs. A bar of steel such as we use weighs 50 pounds to the foot. Because of the difficulty of handling heavy material like that it is easier to use the shorter lengths, even though that involves more waste. Normally, in the heavier sizes, we buy 14-foot bar stock. But we have increased the length to 20 feet. That has increased the handling problem, but it means fewer waste ends."

A Purchasing Agent's experiences in the third phase of scrap activity, buying it, strengthen his hand for selling and aiding in salvaging scrap. On this purchasing phase, Mr. Marsden said:



A carload of scrap from a flat-iron factory is transferred to the stock bin.

A 54-inch electric magnet handles the scrap efficiently and cleanly.

"The scrap we buy is of five classes, as follows:

"(1) Low 'phos' plate scrap. This is 3/16 of an inch thick and heavier, and up to 18 inches in length.

"(2) Low 'phos' punchings—to use another trade name.

"(3) Factory bundles. These are of light gauge materials, compressed by hydraulic scrap balers. The ideal size is 6x8x14 inches.

"(4) Manganese scrap. We buy this unprepared and then cut it, with acetylene torches, into suitable sizes for charging.

"(5) Cast-iron machinery scrap.

"The last item is for cupola use in our gray iron foundry. All the others are for electric furnace use in the steel foundry. In connection with the electric furnaces there is a point that should be mentioned. This is that due to the type of casting we specialize in—namely, manganese steel castings—we must be sure that our scrap comes within a definite analysis range."

Although Mr. Marsden is as busy as the typical Purchasing Agent, he personally inspects every car of scrap arriving on the Pettibone Mulliken tracks as the result of a purchase from a broker. In sizing up the contents of each car, he calls into a play a sort of second sense, based somewhat on the type of operation from which the scrap resulted. In this he keeps in mind the time-worn caution to every purchaser—*Caveat emptor,* let the buyer beware. If he finds that the material in any car is questionable, he calls on the company's metallurgical laboratory to test it before it can be unloaded. This modern, well-equipped and well-staffed laboratory, besides engaging in research, analyzes each heat of steel before it is poured. Through its chemical and physical tests it controls the quality of the castings turned out by the company. It is in strong position to pass when necessary on the scrap which the company sells, salvages, or buys.

In case a car of scrap bought from a broker is not of the grade or up to the standard of quality ordered, it is rejected. Relations between manufacturers and brokers in the scrap business are such that a Purchasing Agent's rejection is final; at least that is Mr. Marsden's experience.

Lessons of Experience

Perhaps R. F. Marsden's interest in scrap is greater than that of many fellow Purchasing Agents because of a series of experiences beginning in boyhood. Now 38 and going strong in all phases of the purchasing side of business, he made his first money 29 years ago salvaging and selling scrap. His father, head of the Wisconsin Farm Implement Company, at Beloit, Wis., finding him trying to make some money by helping news boys yell "Extra," said to him:

Pouring a large manganese steel casting. Proper grades of scrap are an important ingredient.

has been a Purchasing Agent, and especially in the days since the defense demands for scrap have become so prominent, pride has worked the other way. The Mr. Marsden of today, vigorous and frank, has pardonable pride in which he is doing as a Purchasing Agent on the three phases of scrap. Possibly this is partly because scrap is no longer the Cinderella item, but it rather the glorified item, among the materials for use in defense against a Hitlerian gang bent on world conquest and the scrapping of free enterprise.

Mr. Marsden's experiences in industry have laid a strong foundation, not only for the general executive and operating duties of a Purchasing Agent, but also for understanding the needs of the producing departments and the foundry in relation to the selling, salvaging and buying of ferrous waste. After finishing high school and two years of training at the Northwestern Business School, at Spokane, Washington, he did some barnstorming as a machinist, including work in railroad shops. Then for twelve years, beginning in 1924, he worked in the Beloit, Wis., plant of Fairbanks, Morse & Co., including service at store-keeping, expediting and local buying. When he became Purchasing Agent for the Pettibone Mulliken Corporation in 1936, it was at the recommendation of Fred J. Heaslip, Purchasing Agent of Fairbanks, Morse & Co., at Chicago.

Asked by the writer for his most valuable suggestion for other Purchasing Agents out of his experience in selling scrap, Mr. Marsden thought for a few minutes, then replied:

"There is no one outstanding suggestion, but here is something important to Purchasing Agents and others concerned with the disposal of scrap: Know the true grade of the material you are selling. If you overgrade you may get a rejection from the buyer at destination. If you allow the broker to under-grade your material you will not receive its true value. The broker is not honor bound to sell the material on the same grading that he buys it. He may sell at a grade or two higher than he buys, which adds to the glamour of his calling, at your expense."

A simple mimeographed form carries the record of scrap transfers.

DEPARTMENTAL SCRAP TRANSFER

Transfer made to - Yard (salable scrap) _____ Date _____
" " " - Foundry _____
" " " - Dept. No. _____
" " " - General Stores Dept. _____

KIND OF SCRAP	WEIGHT	VALUE PER LB.	TOTAL VALUE
		TOTAL	

Transfer made by Dept. No. _____ Signed _____

Scrap received by _____

"Ronald, I'll give you a real chance to earn something; you can do it salvaging scrap from waste hauled to fill a lot on our company's property by foundrymen."

His father gave him a cent a pound, today's price, for what he scraped out of that waste. Later, with other school-boy "junkies" he went out with a gunny sack Saturdays, picking up old fruit-jar tops, electric light bulbs and other waste, and earning as much as $5 on a holiday.

By the time he was 13, the youthful Marsden had another boy go along with him, a lad less proud than he was, to carry the bag when they came out of the alleys and crossed a street. But in the years since he

THE MARKET PLACE

Quotations on basic materials for carloads or mill shipments, with comparative prices quoted one month ago and one year ago

(*denotes ceiling price)

	Jan. 1 1941	Nov. 24 1941	Dec. 22 1941
ACIDS			
Acetic, 28%, cwt.	2.23	3.18	3.18*
Muriatic, 18 deg., cwt.	1.50	1.50	1.50
Nitric, 36 deg., cwt.	5.00	5.00	5.00
Oxalic, Works, cwt.	10.75	11.25	11.25
Phenol, Works, cwt.	14.25	14.25	14.25
Sulphuric, 66 deg., ton	16.50	16.50	16.50

BUILDING MATERIALS			
Brick, N. Y. dock, per M.	12.00	12.00	12.00
Cement, f.o.b. plant, bbl.	2.15	2.15	2.15
Glass, single B, per box	2.70	2.98	3.30 ↑
Lime, per bbl.	2.85	2.85	3.00 ↑
Nails, wire, per keg	2.55	2.55	2.55*
Oak flooring, per M. ft.	83.00	86.00	85.00 ↓
Southern pine, K.C., per M. ft.	32.86	40.50	40.50*
CHEMICALS			
Alcohol, denatured, gal.	.32½	.38	.38*
Alum, potash, cwt.	3.75	3.75	3.75
Alumina Sulf., Comm., Works, cwt.	1.15	1.15	1.15
Ammonia, aqua, 26 deg., drums	.02¼	.02¼	.02¼
Arsenic, White, cwt.	3.50	4.00	4.00
Red, cwt.	nom.	nom.	nom.
Barium Chloride, ton	77.00	77.00	77.00
Carbonate, ton	56.50	56.50	56.50
Benzol, pure, gal.	.14	.14	.15 ↑
Borax, powd., ton	48.00	48.00	48.00
Chlorine, cwt.	1.75	2.00	2.00
Formaldehyde, lb.	.05¼	.05¼	.05¼*
Glycerine, drums, lb.	.12½	.18¼	.18¼*
Lead acetate, white, broken, cwt.	11.00	12.50	12.50
Nickel sulphate Double	.13	.13	.13
Single	.13	.13	.13
Potash Caustic, solid	.06¼	.06¼	.06¼
Permanganate	.20	.20½	.20½
Sal Ammoniac Gran. white, cwt.	4.50	4.50	4.50
Gran. gray, cwt.	5.75	5.75	5.75

	Jan. 1 1941	Nov. 24 1941	Dec. 22 1941
Saltpeter crystals	.086	.091	.091
Soda Ash, 58%, light, bulk, cwt.	.95	.90	.90
Caustic, 76%, solid	2.30	2.30	2.30
Sal, Works, cwt.	1.10	1.10	1.10
Sodium Bicarbonate, cwt.	1.70	1.55	1.55
Tri-Sodo. Phosphate, cwt.	2.10	2.90	2.90
Silicate, 60 deg., cwt.	1.65	1.65	1.65
Sulphur, Comm., cwt.	1.60	1.65	1.60 ↓

COAL & COKE			
Anthracite, stove, mines	6.25	6.75	6.75
Bituminous, Cleaf, mine run	2.50	2.70	2.70
Beehive Coke, Connellsville	5.00	6.00	6.00
By-product Coke, Newark	11.85	12.40	12.45* ↑
FERTILIZERS			
Muriate potash, 62-63%, per unit K 20	.53½	.53½	.53¼ ↓
Sulphate potash, 90-95%, bags	36.25	36.25	36.25
Nitrate soda, bulk	27.00	27.00	27.00
Sulphate ammonia, dom., bulk.	28.00	29.00	29.00
Steamed bonemeal, 3 and 50 per ton	32.50	37.50	37.50
GRAINS			
Barley, malting, bu.	.75¾	.82	.85⅞ ↑
Corn, No. 3, yellow, bu.	.62¾	.67	.75½ ↑
Oats, No. 2, white, bu.	.40	.48¾	.56¼ ↑
Rye, No. 2, Western, bu.	.65⅞	.81⅛	.84½ ↑
Wheat, No. 2, hard winter, bu.	.83½	1.12	1.15¾ ↑
Flour, spring patents, 196 lbs.	4.85	6.15	6.45 ↑
HIDES			
Light native cows, lb.	.13½	.15½	.15½*
Heavy native steers, lb.	.13	.15½	.15½*
Calfskins, 5-7 lbs. per skin	1.75	1.65	1.65*

IRON & STEEL

	Jan. 1 1941	Nov. 21 1941	Dec. 22 1941	
Pig iron, foundry No. 2	24.00	24.00	24.00*	
Pig iron, basic, valley	23.50	23.50	23.50*	
Cast iron pipe, New York	52.20	52.20	52.20*	
Forging billets, Pittsburgh base	40.00	40.00	40.00*	
Sheet bars, Pittsburgh base	34.00	34.00	34.00*	
Wire rods, Pittsburgh base	40.00	40.00	40.00*	
Cold rolled sheets, cwt., Pittsburgh base	3.05	3.05	3.05*	
Hot rolled annealed sheets, cwt., Pittsburgh base	2.10	2.10	2.10*	
Cold rolled strips, cwt., Pittsburgh base	2.80	2.80	2.80*	
Hot rolled strips, cwt., Pittsburgh base	2.10	2.10	2.10*	
Tin plate, cwt., Pittsburgh base	5.00	5.00	5.00*	
Bars, cwt., Pittsburgh base	2.15	2.15	2.15*	
Shapes, cwt., Pittsburgh base	2.10	2.10	2.10*	
Bright wire, cwt., Pittsburgh base	2.60	2.60	2.60*	
Ground shafting, cwt., Pittsburgh base	2.65	2.65	2.65*	
Rails, ton, Pittsburgh base	40.00	40.00	40.00*	

METALS, NON-FERROUS

Aluminum, virgin ingots	.17	.15	.15	
Antimony, American, spot	.14	.14	.14	
Copper Electrolytic	.12	.12	.12*	
Cromium, 97%, spot	.84	.84	.84	
Lead, E. St. Louis	.0535	.057	.057	
Nickel, ingot	.35	.35	.35	
Quicksilver, flask	163.00	199.00	215.00	↑
Silver, bars, N. Y., per oz.	.34¾	.34¾	.34¾	
Tin, Straits, spot	.501	.52	.52*	
Zinc, E. St. Louis	.0725	.0825	.0825	

METAL PRODUCTS

Copper, wire, bare, cwt.	15.375	15.375	15.375	
Yellow brass sheets, high	19.23	19.48	19.48	

NAVAL STORES

Turpentine, gal.	.44	.81	.80	↓
Rosin, Grade B, cwt.	2.00	3.37	3.65	↑

PAINT MATERIALS

White lead, dry, basic, carbonate	.07	.07½	.07½	
Carbon black	.03075	.03425	.03425	
Shellac, orange	.17	.30	.32	↑
Linseed oil	.088	.10	.111	↑

	Jan. 1 1941	Nov. 21 1941	Dec. 22 1941	

PAPER

News, roll, ton	50.00	50.00	50.00	
Book, M. F., cwt.	6.40	7.40	7.40	
Wrapping, northern, cwt.	5.25	5.25	5.25	
Wrapping, southern, cwt.	4.25	4.50	4.50	
Wrapping, manila jute, cwt.	8.25	8.75	8.75	
Chip board, No. 1, ton	30.00	45.00	45.00*	
Wood pulp, mech., ton	34.00	36.00	36.00	
Wood pulp, sulph., No. 1, cwt.	3.17½	3.17½	3.17½	

PETROLEUM

Crude, Mid-Continent	1.02	1.17	1.17	
Crude, Penna.	1.59	2.30	2.30*	
Gasoline	.05½	.08½	.08½	
Bunker Oil C.	1.15	1.50	1.35	↓
Kerosene, 41-43 grav.	.052	.053	.053	
Penn. bright stock, light, 25 P. T.	.19	.36	.36	
Penn. cylinder oil, 600 flash	.17½	.26½	.26½	

RUBBER

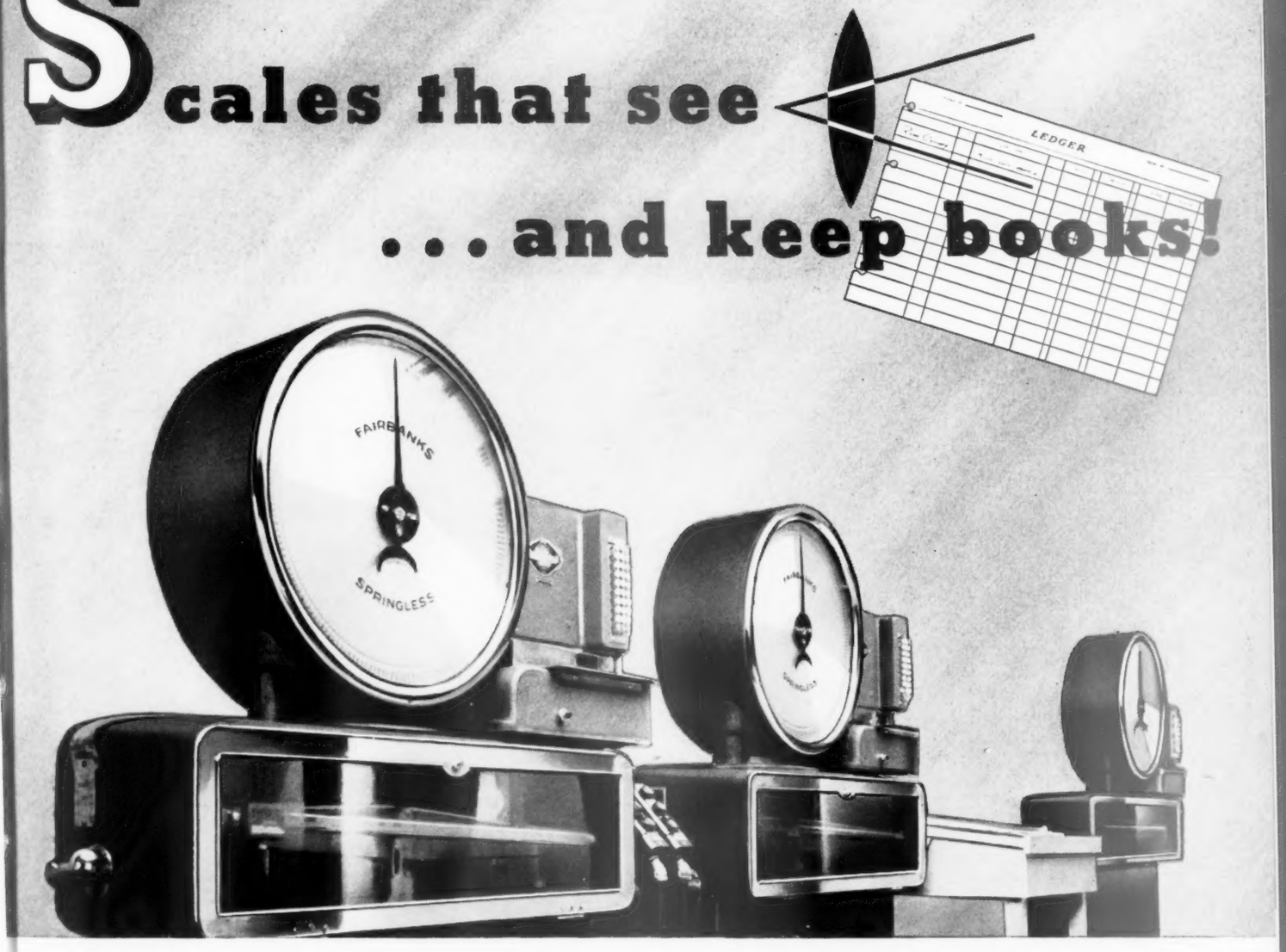
Smoked sheets	.20⅝	.22½	.22½†	

(† Rubber Reserve Co. selling price)

TEXTILES

Cotton middlings, Galveston	.097	.1597	.1696	↑
Cotton yarns, 22s	.28	.38½	.39½	↑
Print cloths, 38½", 64 x 60	.05⅜	.08037	.08224*	↑
Sheetings, 37", 48 x 48	.06¼	.09⅛	.09375*	↑
Wool, fine combing, ½-blood	1.02	1.10	1.15*	↑
Worsted yarns, French 2.40s	1.80	nom.	nom.	
Worsted yarns, English 2-40's	1.82½	nom.	nom.	
Silk, Japan, double ex. cracks	2.52	3.08	3.08*	
Rayon, viscose, 150, 40s	.53	.55	.55	
Burlap, 10½-oz., 40"	.0815	.1150	.1150*	
Hemp, Manila	.07⅜	.10⅞	.10¼	↓

Scales that see ...and keep books!



IT costs money to be inaccurate with "tonnage"—and it costs more money to be s-l-o-w.

In one of the most modern coal preparation plants in the world, Elkhorn Coal Company, Wayland, Ky., you will find a battery of the most modern scales handling "tonnage" at high speed.

These Fairbanks Scales with "electric eyes" shut off flow to hoppers automatically when the pre-set weight is obtained. A printed record is made of each operation automatically, and an ingenious keying system credits the tonnage to the man who mined it.

To make errors in weighing well-nigh impossible, to fit weighing speedily into the production flow, to protect alike the buyer, seller, and all whom weighing affects is the aim of this, the most experienced and most modern organization of scale makers.

There are Fairbanks Scales in types for your every weighing need... and Fairbanks Scale Engineers are available at your call.

Fairbanks, Morse & Co., Dept. A-68, 600 S. Michigan Ave., Chicago, Illinois. Branches and service stations throughout the United States and Canada.

We Want To Help You

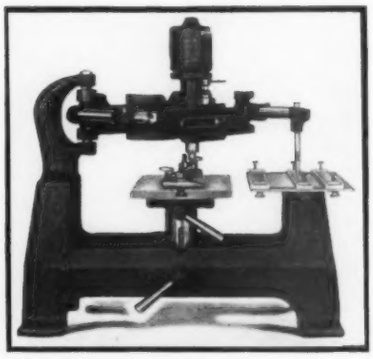
It is our desire to do everything we can to aid in the speed-up of American production. Our scale engineers can possibly suggest new and more efficient use of your present scales or modification which will expand their capacity.

FAIRBANKS·MORSE SCALES

DIESEL ENGINES ELECTRICAL MACHINERY RAILROAD EQUIPMENT WASHERS-IRONERS STOKERS
PUMPS MOTORS WATER SYSTEMS FARM EQUIPMENT AIR CONDITIONERS

New PRODUCTS · IDEAS

PANTOGRAPHIC MACHINE



■ **An improved machine** of pantographic operation, for rotary engraving, electrical marking, and acid etching, is announced by H. P. Preis Engraving Machine Co., Newark, N. J. Separate heads, quickly interchangeable, are used for the three classes of work, and the ball-bearing-mounted pantograph provides reductions from 1.8 to 1 down to 5 to 1.

With the engraving head, shown in the illustration, the depth of cut is controlled, independent of the depth of the master characters, by a micrometer adjustment mechanism. Movement of the cutter, toward and away from the work, is controlled by a cam-action drop lever, independent of the vertical position of the tracing stylus, with resulting ease of handling, cleanness of cut, and accuracy. The cutter spindle, equipped with adjustable ball bearings, is driven by a ball-bearing motor of universal type. This equipment produces uniformly excellent engraving on all metals, from mild steel to soft alloys, and on plastic materials, ivory, hard woods, etc.

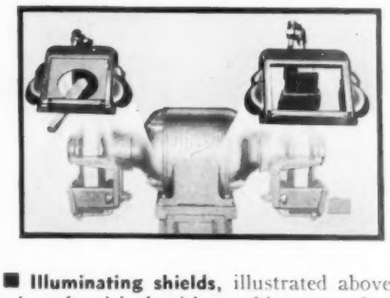
The electrical marking head is served by a transformer with a ten-stage voltage-control switch, for selecting any desired degree of marking, from very light to very heavy. Contact of the marking point with the work is controlled by sensitive spring pressure, and the point may be removed from its fixture for freehand marking. This unit will mark steel of any degree of hardness and is particularly useful where engraving and stamping are not practicable.

The acid etching head is used for cutting through an acid-resisting coating on metal or glass, in preparation for the application of the acid etching fluid. This method is widely used in marking gages, tools, and machine parts, as well as such glass objects as tubes, laboratory equipment, and optical lenses.

The copy holder consists of three or more individual slides which may be positioned independent of each other, for variable space between the lines. This feature makes it possible to do, in a single set-up, many jobs which formerly required two or more set-ups.

Designed for mounting on a bench, the basic machine is a compact unit measuring 21 inches long, 14 inches wide, and 15 inches high.

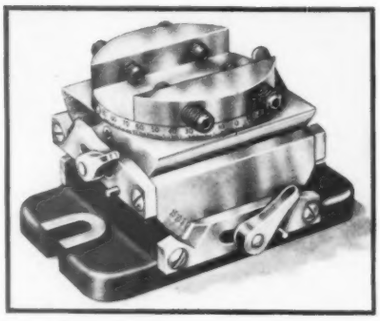
ILLUMINATED EYE SHIELDS



■ **Illuminating shields,** illustrated above, when furnished with machine are wired so that they automatically light when machine is started. Each guard has switch and two rough service bulbs. Frame of aluminum casting is very rugged. Adjustments can be locked through socket head set screws.

The lens of shield on left affords two power magnification, in addition to a light on each side of wheel. This affords ideal set up for close grinding work. It has plain glass under the lens to prevent pitting.

ANY-ANGLE TOOL VISE



■ **Designed for** grinding chip-breaker grooves into the tips of carbide tools the any-angle tool vise has been placed on the market as a separate unit by Hammond Machinery Builders, Inc., Kalamazoo, Mich.

Complete in itself, the vise is mounted on a lug base which is easily affixed to a machine table.

The tool vise is constructed on a double-cradle principle permitting adjustment of grinding angles on three separate planes. Two closely machined steel blocks, rounded on the bottom, are cradled into each other at right angles. After adjustment, they are solidly locked together by tightening cam locks operating in machined segments at ends of the respective blocks. Mounted atop these two blocks is a flat, circular piece which swivels 90° from center of any of the four sides of the block immediately below. This piece carries the vise jaws, holding tools firmly by means of Allen screws.

The principle of closely fitting steel blocks which may be tightly locked together permits of absolutely no vibration or deflection, thereby insuring maximum accuracy of the grinding angle selected. Readings on each block are clearly marked. Each tilts 15° either way from horizontal, and this adjustment combined with 360° selectivity of the circular piece at top provides almost any angle desired.

THE DANGER LIES AT THE TURNS

---- LOOK OUT when force hits the turns in PIPING, too!

One of the fastest, most dangerous games in the world, professional ice hockey is a series of lightning thrusts and abrupt turns. Too much speed and power in and out of the sharp curves around the goals results in many bad spills. (I.N.S. photo).

Welding with TUBE-TURN Fittings removes "Danger at the Turns" in Piping!

Abrupt turns and surging speed—the very things that cause most accidents in hockey—also account for major piping troubles.

Wherever there's *a change in flow direction,* look out for extra wear and strain. Be sure of trouble-free operation with Tube-Turn Welding Fittings. They are designed and manufactured *expressly* to protect piping systems at these vulnerable points.

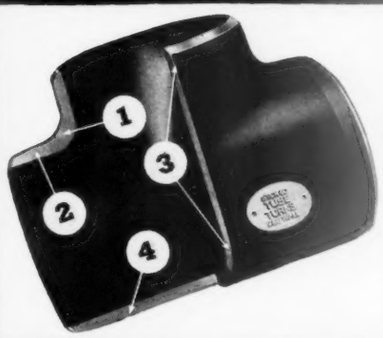
There are all types, sizes and weights of Tube-Turn welding fittings—elbows, returns, tees, reducers, laterals, nipples, and flanges. For *every* welding fitting need, specify Tube-Turn fittings *by name!*

Write for Tube-Turn engineering data book and catalog.

TUBE-TURNS, Inc., Louisville, Ky. *Branch offices:* New York, Philadelphia, Chicago, Pittsburgh, Cleveland, Tulsa, Los Angeles. *Distributors everywhere.*

TUBE-TURN *Welding Fittings*
TRADE-MARK

PROTECTION AT THE TURNS IN TUBE-TURN WELDING TEES



(1) *Extra thickness at crotch,* (2) *reinforcement along top of run,* (3) *reinforcement on sides,* and (4) *increased thickness at bottom* give extra strength to Tube-Turn tees at the points where stress and strain are greatest.

CROSS-SECTION OF TUBE-TURN ELBOW SHOWS SUPERIOR DESIGN

OUTER WALL NOT STRETCHED OR THINNED
SMOOTH INTERIOR WALLS NO WAVES OR RIDGES
SWEEPING RADIUS THROUGHOUT
EASY FLOW MINIMUM RESISTANCE TO FLOW
INSIDE WALL NOT THICKENED
CLEAN ACCURATE BEVEL

Here are vital engineering advantages that tell quickly why you get more with Tube-Turn welding elbows—*the elbow that made ALL Tube-Turn fittings famous.*

We'll hammer away till we Win!

★ *Yes, this Nation has always hammered away until her wars have been won.*

To further that purpose American Chain & Cable Company provides products which either help to build or are a part of planes, tanks, battleships, guns, rifles, munitions—army camps, air fields, shipyards—and all the many industries which back these activities and products.

This is not the first war in which ACCO products have been called to aid our government. But we are resolved to help make it the last war—by aiding our Country to wage a war so conclusive that long years of peace will follow.

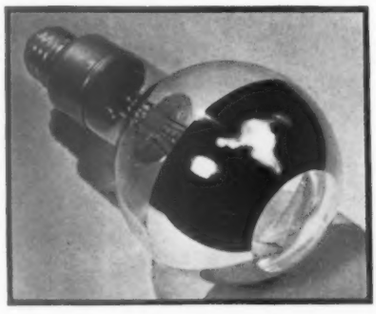
We'll hammer away till we Win!

Below are listed some of the essential things we make for Industry, Agriculture, Transportation and the National Defense.

AMERICAN CHAIN & CABLE
COMPANY, INC. • BRIDGEPORT, CONNECTICUT

American Chain, American Cable Wire Rope and Aircraft Controls, Campbell Cutting Machines, Ford Chain Blocks, Hazard Wire Rope, Manley Garage Equipment, Owen Springs, Page Fence and Welding Wire, Reading Castings, Reading-Pratt & Cady Valves, Wright Hoists and Cranes

INFRA-RED TUNGSTEN HEAT LAMP



■ **The first commercial** type of radiant heat lamp whose design and construction make possible and entirely practicable 100% control of heating efficiency, has been developed in the Birdseye Research Laboratories of the Wabash Appliance Corp., Brooklyn, N. Y.

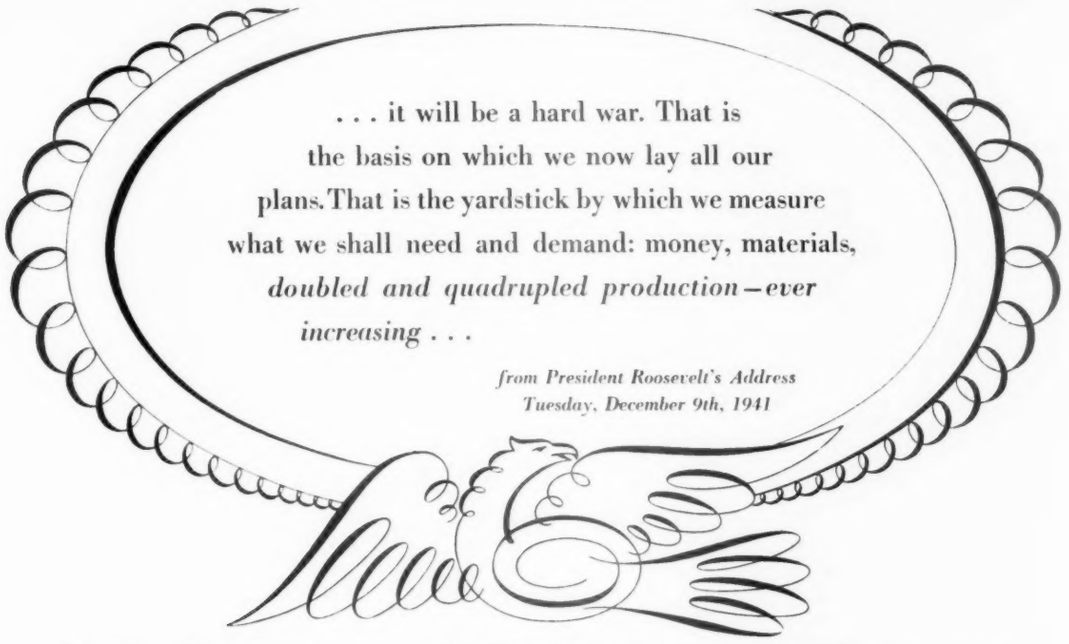
The bulb is designed to put to practical use for heating what Wabash engineers term is the "spilled heat" lost in even the most efficient coordination of heat lamp and commercial reflector in use today. They point out that although the many efficient heating reflectors provide convergent, parallel or divergent heat beams as needed, there is still the average of 25% of the heat rays that are spilled outside the control of any reflector and thereby lost.

This lamp is said to control these "spilled heat rays" and to put them to work for heating even when present reflector equipment is utilized. The new bulb is distinguished by a ring lining of pure silver sealed inside the bulb at a point just below the focal point of the filament, as illustrated. This silver ring leaves a clear "bullseye" spot through which heat beams are projected from the filament direct to the heating area without spill or loss. All remaining heat rays, including what were formerly spilled heat rays, are now gathered into the control area of the reflector by the silver ring lining, and projected down to the heating area.

CONDENSATE RETURN SYSTEM

■ **The essential** engineering features of the Cochrane-Becker high-pressure condensate return system, as announced by Cochrane Corporation, Philadelphia, Pa., are that its eductor principle of operation insures thorough condensate and air removal from process apparatus making increased production possible by maintenance of uniformly high temperatures. Then, after expulsion of the air from the closed circuit, the condensate is returned to the boiler at temperatures close to that of process pressure without flash loss and with remarkable fuel savings.

The specially-designed centrifugal pump draws water from the thermo-fin


. . . it will be a hard war. That is
the basis on which we now lay all our
plans. That is the yardstick by which we measure
what we shall need and demand: money, materials,
doubled and quadrupled production—ever
increasing . . .
from President Roosevelt's Address
Tuesday, December 9th, 1941

Need Help to Hit This New Tempo?

Multiplied production means multiplied problems—with less time for experimenting. Why not answer your steel puzzles *faster* with Frasse Technical Service?

Production bothering you? Let Frasse engineers help you find a better steel or speedier method. Blocked by shipping "promises"? Let Frasse Technical Service try to find you an easier-to-get substitute. Priorities? You needn't be confused—Frasse can give you up-to-the-minute information at once.

If it's reference data you need, Frasse can provide it aplenty—calculators to simplify heat treatment, fabricating and design handbooks, and a *new* data chart file specially designed for mechanical steel users. (The latest addition shows a short-cut system for figuring tubing weights. It's yours for the asking.)

Whatever your steel problem, Frasse engineers will help you unravel it faster. They're competent (the letter below is one of scores open to inspection)—and their services are "on us." . . . *Call Peter A. Frasse & Co., Inc., 17 Grand Street, N. Y. C. (Walker 5-2200). 3921 Wissahickon Avenue, Philadelphia (Radcliff 7100—Park 5541). 50 Exchange Street, Buffalo (Washington 2000). Jersey City, Hartford, Rochester, Syracuse, Baltimore.*

"Some letters are unpleasant and some are very pleasant to write. It is a pleasure to write this and to thank you for your efficient service and your complete cooperation in getting us out of our machining difficulties. Frankly, if your Mr. Van Horn had not come down, we would have had to turn down a fairly good sized contract in conjunction with the Defense program."

Sincerely yours,
JOHN CHATILLON & SONS, W. L. Stafford *Purchasing Agent*

Frasse Technical Service

TO AID YOU IN PROCUREMENT, DESIGN, AND PRODUCTION PROBLEMS INVOLVING MECHANICAL STEELS.

Frasse Mechanical Steels

SEAMLESS STEEL TUBING • SAE ALLOY STEELS • STAINLESS STEELS • COLD FINISHED BARS • WELDED STEEL TUBING • DRILL ROD • COLD ROLLED STRIP AND SHEETS

When writing Peter A. Frasse & Co., Inc. please mention Purchasing

Photos Courtesy of International Harvester Company

Highspeed SHELL TURNING with *cemented carbide tools* and scores of other tough metal-working operations function better with this genuine new development.

Stuart's Solvol Liquid Cutting Compound, unique in the field of tool lubricants, is already in wide use at many of America's largest and best known munitions plants. It is solving cutting problems and definitely doing its part in speeding up production. Try it quickly and benefit by the obvious improvement and economy.

• • •

Wire for production sample — free to any concern working on defense

For All Cutting Fluid Problems

D. A. STUART OIL CO.

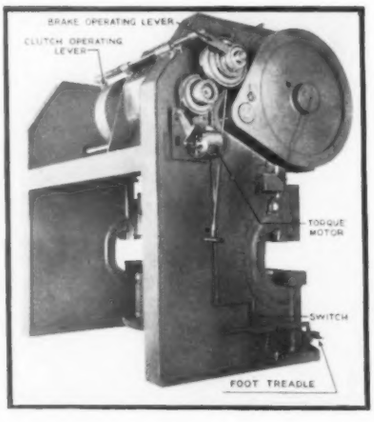
Chicago, U.S.A. • LIMITED • Est. 1865

Warehouses in All Principal Metal Working Centers

priming loop and discharges it as a high velocity jet through the jet pump nozzle. This jet, striking the returned hot condensate, induces condensate flow through the mixing tube into the thermo-fin priming loop. The additional volume of the returned condensate introduced into the constantly filled loop results in the discharge of an equal volume through the air separator to the boiler.

The closed circuit from the boiler, through the process equipment, and back to the boiler results in quicker and more uniform heating hence increased production and improved quality. At the same time flash loss is eliminated providing 1% fuel saving for each 11-degree temperature gain.

ELECTRICALLY-OPERATED CLUTCH



■ **Developed for** Steelweld Bending Presses by the Steelweld Machinery Division of The Cleveland Crane & Engineering Co., Wickliffe, Ohio, this electrically operated clutch and brake mechanism reduces the fatigue of the press operator to a large extent by eliminating the usual physical effort required to engage the clutch manually. It is no longer necessary to hold the foot on the treadle to keep the clutch engaged, although such an arrangement can be provided if desirable. Other features are fast snappy clutch and brake action with wear considerably reduced because of decreased clutch and brake slippage.

The mechanism is set in operation by depressing the foot treadle which actuates the switch and brings the torque motor into play. Only a slight pressure of the foot is required to operate the tredle since it merely closes the small switch indicated. The gear segment is thereby brought to one extreme position or the other depending upon whether the clutch or brake is being engaged. (The photograph shows the brake engaged.)

A shaft connecting the clutch and brake operating levers is worked by a connecting rod from the gear segment through a toggle. The torque motor is under power only when the clutch is engaged. When the power to the torque motor is cut a heavy spring on the

Partners in Defense

Production and use of steel are teamwork jobs. Neither one can exist without the other. Through forty-one years, Youngstown and its customers have been partners in helping America to build for progress and prosperity.

Now the emergency has interfered with our normal relationships. New demands impose burdens and restrictions on us all. But we believe you will see clearly with us that the solution of our problems, both national and individual, lies in mutual cooperation.

Let us remember that today you and we are partners in a new sense—partners for the protection of America.

THE YOUNGSTOWN SHEET AND TUBE COMPANY

YOUNGSTOWN, OHIO

25-30D

When writing The Youngstown Sheet and Tube Company please mention Purchasing

The *new* CM Meteor heavy-duty wire rope electric hoist is industry's newest recruit for speeding-up production. It is designed, engineered and built to answer the nation-wide demand to produce more and faster. Featuring true balance, streamlined design . . . aeroplane type cooling . . . helical gears and one point lubrication, the CM Meteor provides fast materials handling with complete safety. Compact . . . low head room . . . readily adaptable to present systems. Only 110 volts pass through the push button station. The Meteor really *smashes* bottlenecks by speeding up materials handling.

Completely illustrated engineering Catalog No. 142 in color, showing details, specifications, applications and point by point advantages of the CM Meteor will be sent on request. Write:

CHISHOLM-MOORE HOIST CORPORATION

(Division of Columbus-McKinnon Chain Corp.)

120 FREMONT AVE. TONAWANDA, N. Y.

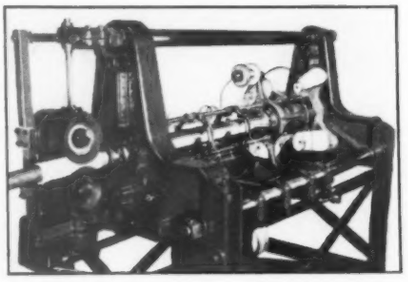
Branch Offices: NEW YORK • CHICAGO • CLEVELAND

clutch-brake connection shaft applies the brake. Thus in case of power failure, it will be seen that the brake comes into action and the machine is stopped at once.

Depressing the treadle causes the clutch to become engaged and the brake disengaged; depressing it a second time produces the reverse action, i.e., disengages the clutch and engages the brake. With the clutch engaged, the press ram operates continuously until the treadle is depressed.

An ingenious safety toggle makes operation of the mechanism positive and practically foolproof. Because of this toggle there is no danger of clutch or brake being engaged or disengaged unintentionally.

HORIZONTAL HOSE REINFORCEMENT MACHINE



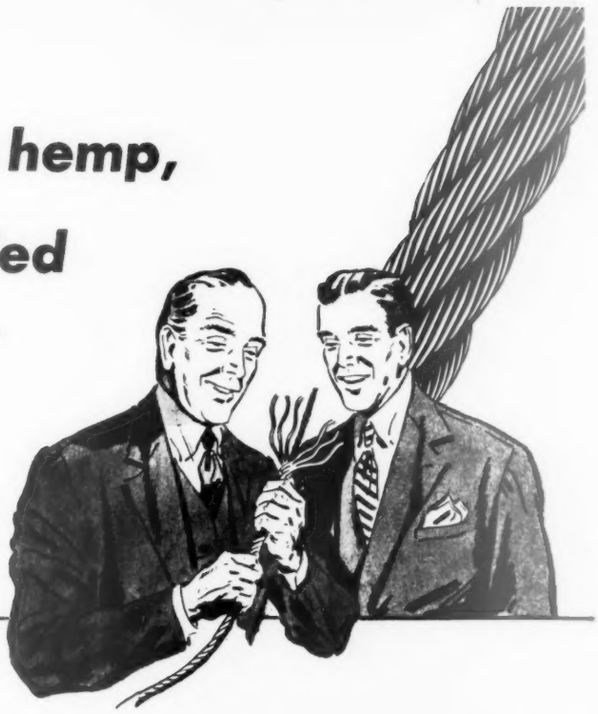
■ **Developed** to produce tubing and hose for airplane controls as well as many other industrial uses by the Fidelity Machine Co., Philadelphia, Pa., this machine knits four to six feet of wire and fabric reinforcement per minute over synthetic rubber inner tubes on steel mandrels in one operation. This is said to constitute an important increase in speed of production. Standard 50 ft. mandrels can be used. These pass over rubber-covered tension feed rolls through a knitting head equipped with latch needles supplied by four cones of yarn and one or two spools of wire. Fabric and wire reinforcement, knitted in one operation, makes a tough, flexible and more nearly non-kinking hose or tube. Mandrel with knitted cover is then drawn out of the machine over a set of rubber-covered tension wheels operating from the same drive and at identical speed to that of the feed rolls. The hose or tubing is now ready for rubber impregnation and vulcanizing.

Manual speed adjustment, controlled by tension applied to belt drive, governs rate of speed. Interchangeable knitting heads, easily removed and replaced, adapt the machine to hose or tube diameters up to 2" I.D.—and simplify the change over.

Push button control; uniform speed of feed and take-off rolls; automatic stop motion; individual motor drive; and compact design—4 ft. x 7 ft. floor space—are other advantages for increased production.

The same machine may be used for making reinforced hose for a wide range of uses, with or without wire insertion.

"You put in steel, and hemp, and something called Experience . . ."



It's something only time and tasks can bring

"Make all the tests you want of wire rope samples. Pull them apart, into steel and hemp, and still you'll never find the quality that's paramount. The makers' experience . . . *knowing how.*

Our experience here at Roebling has two dimensions. You can count it on the map or on the calendar. You can see it working from the ingot to the finished reel.

When Doctor Beebe's Bathysphere sank down into the ocean's depths, a full half mile, his lifeline back to sunlight was a single length of Roebling "Blue Center" Wire Rope. When the builders of Mud Mountain Dam, Enumclaw, Washington, built a 35,000 pound tent that would cover half a city block, to protect their fill, Roebling Wire Rope was chosen to support its immensity, to hold against wind and rain.

Equipping the world's largest power shovel . . . building the Golden Gate and George Washington bridges . . . lifting lives from the world's deepest mine . . . Roebling is both the teacher and the pupil, whenever we tackle such a job. All across the country, on its lakes and oceans, Roebling's learning every day ways to make "Blue Center" better than before. Experience . . .

As Roebling field men learn from rope at work, new generations here at Trenton are learning secrets from the old. Father is teaching son how to tell when an ingot is ready tc leave the soaking pit, to be kneaded into Roebling billets. Roebling engineers are learning more and more of wire rope's jobs, and how to meet them to a 'T'.

Roebling research is uncovering brand new facts that will make this trade mark mean even more to-morrow . . ."

JR ROEBLING

Experience of men in the Roebling mills, of Roebling men in the field . . . Roebling process control, and engineering, and research . . . there's many a hidden ingredient in "Blue Center" Wire Rope. Reasons why it lives so long, and never fails to deliver its full measure of service.

JOHN A. ROEBLING'S SONS COMPANY
TRENTON, NEW JERSEY
Branches in Principal Cities

THAT'S THE ONLY WAY TO MAKE

ROEBLING

"Blue Center"

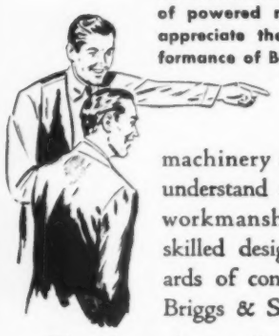
STEEL WIRE ROPE
PREFORMED OR NON-PREFORMED

When writing John A. Roebling's Sons Company please mention Purchasing

4 CYCLE
BRIGGS & STRATTON
GASOLINE MOTORS

Production MANAGERS

Those men who supervise the manufacture of powered machines and appliances, appreciate the construction and performance of Briggs & Stratton Motors.



Production managers —men who know good machinery and how to make it— understand and appreciate the fine workmanship, quality materials, skilled designing and high standards of construction so evident in Briggs & Stratton motors.

They know how well it pays their companies to power with Briggs & Stratton motors and add their stamp of approval to these compact, dependable, air-cooled gasoline motors that make their equipment perform best — always.

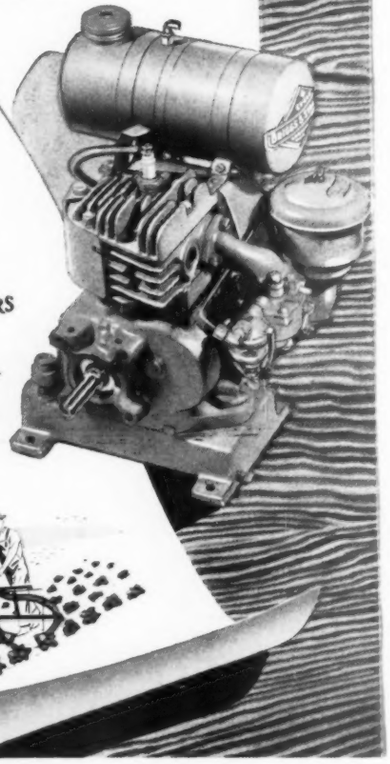
BRIGGS & STRATTON CORP.
Milwaukee, Wisconsin, U. S. A.

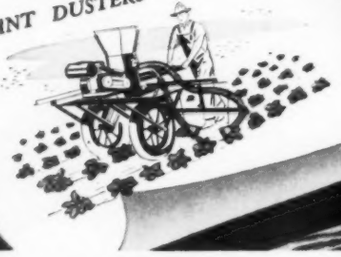
A Few of Numerous Briggs & Stratton Motor Applications

FLOOR SANDERS

PAINT SPRAYERS

PLANT DUSTERS





When writing Briggs & Stratton Corp. please mention Purchasing

GREASE AND DIRT SOLVENT

■ **Announcement** is made of a new mineral grease and dirt digestive solvent by Curran Corp., Malden, Mass. It is available in the form of a concentrate, which may be diluted before use to charge large open cleaning tanks or vats.

It is a superior substitute for Trichlorethylene vapor phase metal cleaning tanks, particularly in heavy duty automotive or similar applications where there is much insoluble dirt or smut to be removed.

The marketing of the product is announced at a time when there are far-reaching shortages of all chlorinated solvents.

The cleaning method is carried out by cold immersion of greasy or dirty parts. The solvent not only takes the cling out of hard mineral dirt and grease accretion, but emulsifies them as well, so that they may be instantly and completely rinsed away by sluicing with a water hose.

The removed oil and dirt disappears in the form of a milky oil-in-water emulsion which does not clog sewer drains, or present a fire hazard. The process makes possible grease cleaning operations on a large scale with little investment in equipment. Only simple rectagular tanks of suitable dimensions, and having an over-all capacity of at least 300 gallons, is necessary, and many reports have been received as a result of preliminary field tests that Trichlorethylene vapor degreasing tanks may be converted to the new solvent digestive and emulsifying method by regular available shop labor.

Successful service tests installation include airline shops, as well as U. S. Government overhaul and repair orders.

PLATING ZINC ON STEEL

■ **In these days** of metal shortages, a new process for using waste instead of new metals will interest manufacturers of wire, strip and other metal products.

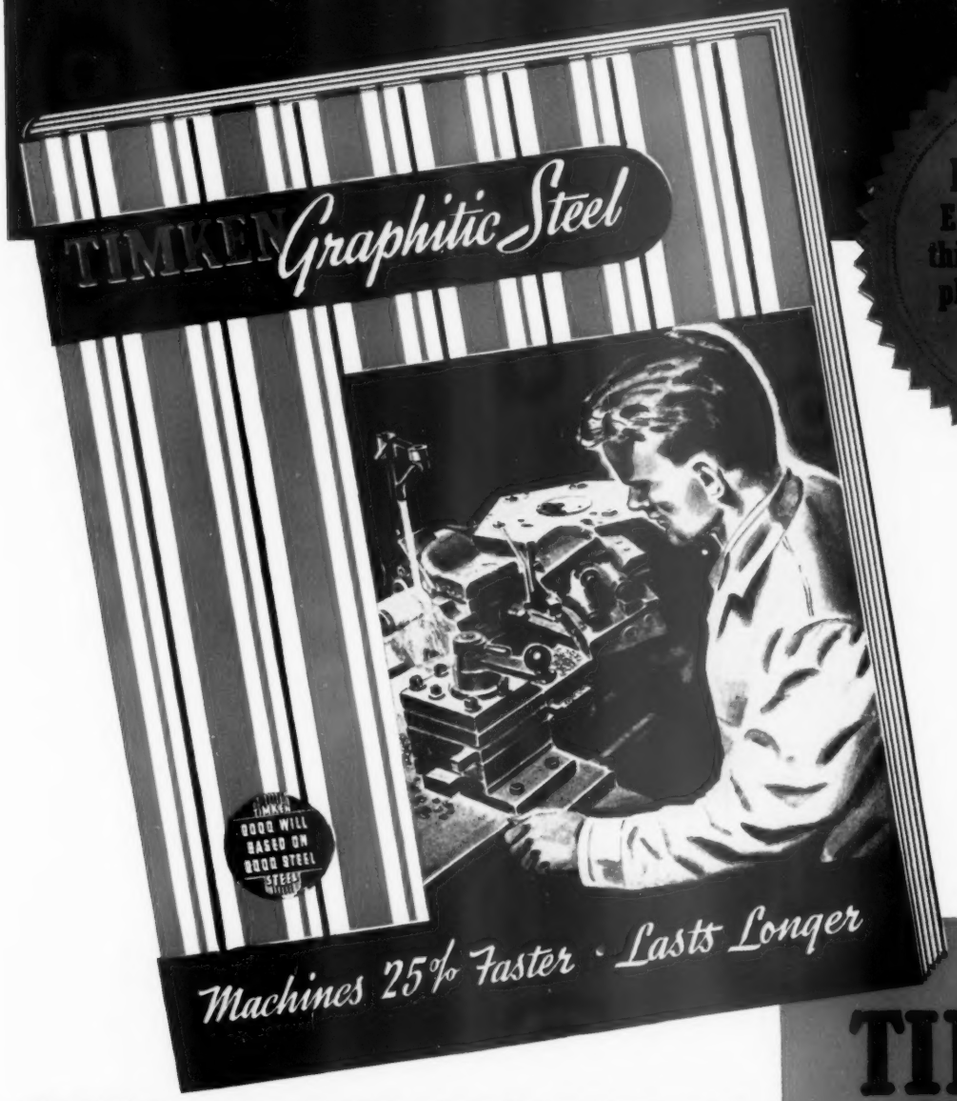
The Hubbell-Weisberg Process is a new method of electroplating steel products with zinc. Its advantage lies in its ability to use cheap sources of zinc instead of zinc anodes. Zinc is dissolved from gal-

Another Edition

OF

THE GRAPHITIC STEEL DEFENSE HANDBOOK

Ask for your copy of the Sixth Printing.
It's revised with up-to-the-minute data.



LOOK AHEAD! Essential during this emergency, Graphitic Steel will be just as essential thereafter.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO
Steel and Tube Division

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
ALLOY-STEELS

Manufacturers of Timken Tapered Roller Bearings for automobiles, motor trucks, railroad cars and locomotives and all kinds of industrial machinery; Timken Alloy Steels and Carbon and Alloy Seamless Tubing; and Timken Rock Bits.

When writing The Timken Roller Bearing Company, please mention Purchasing

SERVING THE NATIONAL DEFENSE PROGRAM

vanizer's skimmings, brass foundry fume, organic reduction residues or ore, by a solution of ammonium chloride and ammonia. Insoluble graphite anodes are used in the plating tank. Plating reduces the zinc content of the plating solution which is then returned to the leaching plant where the zinc removed by plating is replaced.

The process produces zinc coated wire or strip which is equal to that produced by other zinc plating methods. Steel handling, pickling and cleaning are the same as for other processes. The plating tank has been specially designed to take advantage of the fact that anodes seldom have to be changed, and to provide covers which prevent the escape of ammonia fumes and at the same time permit easy re-threading of wires or strips.

The process works at high current densities and this fact combined with the high conductivity of the solution and the careful design of the electrical equipment, from generator to contactor, makes the process highly economical of electric power.

The outstanding value of the process lies in the savings due to the low cost of the zinc going into the plating operation. These savings increase as the amount of zinc used increases, because a special plant has to be provided to put the zinc in the skimmings or other products, into solution, and the operating costs of this plant must be added to the purchase price of zinc in skimmings, etc., to obtain the actual cost of the zinc used in the plating tank. The process becomes economical when about 1½ to 2½ tons of zinc are required every twenty-four hours, depending upon the cost of zinc materials available. As the daily consumption of zinc increases above this minimum, the savings become increasingly impressive.

Savings possible by the use of the Hubbell-Weisberg Process have been estimated at as much as 3.5c per pound of zinc deposited, as compared with furnished zinc in the form of high grade anodes at 8.25c per lb.

The Hanson-Van Winkle-Munning Co., Matawan, N. J., is the sole selling agent for this process.

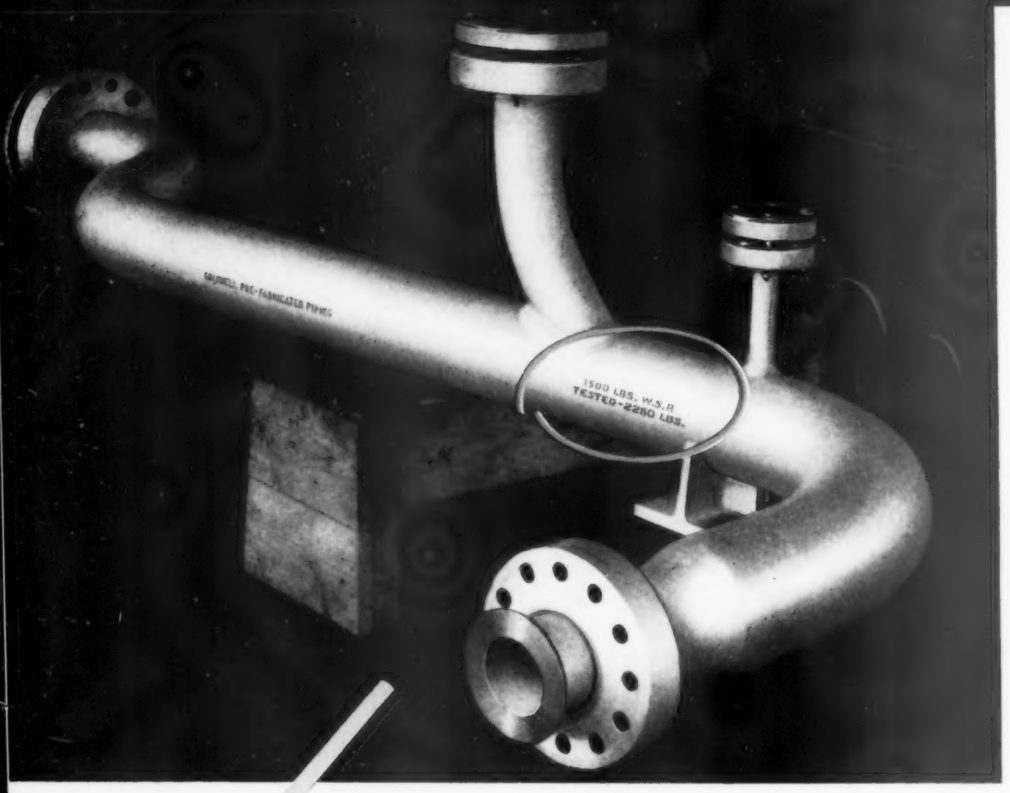
STRUCTURAL BOX PATTERN WRENCH

■ **J. H. Williams & Co.**, New York City, have added a structural box pattern wrench to their line. The wrench is designed to bring greater safety to structural work. The 12-point box head insures a firm hold on the nut and the offset handle provides maximum clear-

● In this national emergency, Atkins is privileged to offer industry a tried and true method of slashing time on an important phase of production. Wherever operations call for metal cutting, Atkins Curled-Chip System promises new performance, increased efficiency. The special tooth shape which characterizes the saws of this system permit higher saw speeds, longer cutting periods without re-grinding, cleaner more accurate cutting . . . Look into these new saws: Clearance Grind Metal Milling Saws (illustrated), Segmental Cold Saw, Powersaw Blades and Metal Cutting Bands. All produce the unique "curled-chips," the modern test for cutting efficiency. For complete performance data, send for the Atkins Curled-Chip Manual.

E. C. ATKINS AND COMPANY, 446 S. Illinois St., Indianapolis, Ind.

When writing E. C. Atkins and Company please mention Purchasing



Not as Different as You Think!

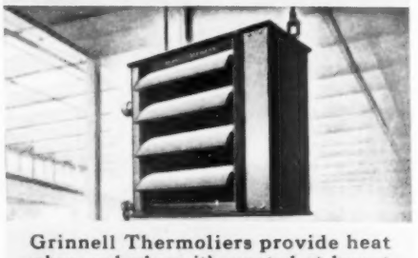
This piece of Grinnell Prefabricated Piping and the barrel of a high power rifle both have to take the terrific punishment of extremely high pressures.

90° bends, curved angle nozzle, lap joint, integral swedged reducer – practically everything that can be done with a piece of pipe is represented in this piece which successfully passed every test under pressure of *more than one ton per square inch!*

Making a piece of piping to specifications like that is a large order, but it is an order that Grinnell takes in its stride. For Grinnell is equipped to interpret any piping requirement and prefabricate the piping accordingly.

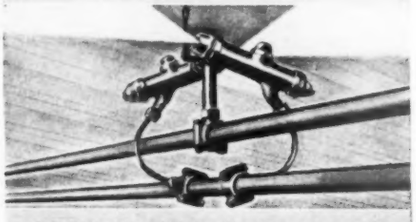
When piping is involved, simply *"Give the plans to Grinnell"*. Grinnell Company, Inc. Executive Offices, Providence, R. I. Branch offices in principal cities.

Grinnell Pipe Fittings make stronger, tighter pipe connections . . .



Grinnell Thermoliers provide heat when and where it's wanted at lowest cost . . .

Grinnell Automatic Sprinklers guard against fire, and husband precious defense efforts . . .



AMCO Humidification Systems aid textile industries speed deliveries of uniforms, parachutes and other defense fabrics

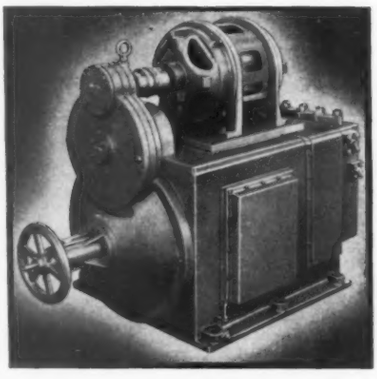
GRINNELL

WHENEVER PIPING IS USED FOR DEFENSE

Grinnell Company, Inc. . . Grinnell Company of the Pacific . . Grinnell Company of Canada, Ltd. . . General Fire Extinguisher Company . . American Moistening Company . . Columbia Malleable Castings Corporation . . The Ontario Malleable Iron Company, Ltd.

ance. The long tapered handle provides ample strength and leverage and is of the type preferred by steel workers for lining up bolt holes. These wrenches are available in 6 sizes with openings 1-7/16 to 2⅜" . . . accommodating U. S. Std. Nuts ⅞ to 1½". They are forged from chrome-molybdenum steel, heat-treated, and finished in baked gray enamel over-all.

VARIABLE DELIVERY PUMP



■ **A variable** delivery, high pressure pump has been built by the Watson-Stillman Co., Roselle, N. J. The flow is infinitely variable from 0 to 6 g.p.m at 5000 lbs. per sq. inch pressure. This is accomplished by a driving member trunnioned on the drive shaft; its angle can be varied while the pump is running to produce a corresponding stepless change in plunger stroke from zero to full 4-inch stroke. The stroke control shaft is extended to the outside of the pump casing for attachment either to a manual or automatic pressure control.

The pump is especially suited to hydraulic press applications where a rapid advance must be followed by a slow movement at high pressure and for boiler feed where sudden changes in output affecting the water level are met.

The pump is equipped with a 25 hp. motor, mounted so that the entire unit is but 4' high and requires only 4'x4' floor space. Weight is 500 lbs. Other units can be built for designed pressures ranging from a few hundred to eight or ten thousand pounds per square inch pressure.

SMALL DRILL

■ **A ¼ inch drill,** proclaimed "The Mightiest Mite of the Drill Field" has been announced by Skilsaw, Inc., Chicago, Ill. It is particularly suited for fast production drilling in America's defense program because of its extreme compactness, light weight, perfect balance and ready power.

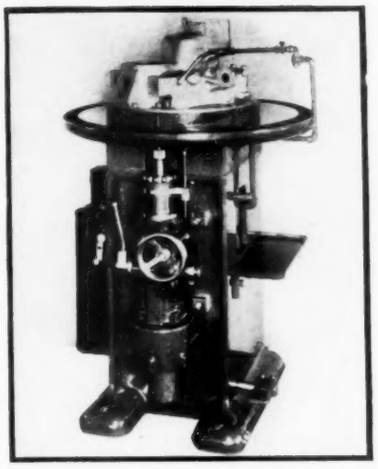
It weighs only 2¾ lbs., is only 6⅝ inches long overall and only 2⅞ inches wide. Fits most comfortably in the palm of a man's hand for drilling in tightest spots. Its ease of handling makes it a

perfect drill for all production work in aircraft, tank, automobile, refrigerator, and other industrial fabrication. Ideal for all ¼ inch drilling in maintenance work.

Die-cast body for great strength with minimum weight. Complete anti-friction ball and needle roller bearings. Helical-cut gearing throughout. Two-pole momentary contact switch with lock for continuous operation. Universal motor.

It has a no-load speed of 1800 r.p.m. and a full-load speed of 1050 r.p.m. Drilling capacity in steel is ¼ in. and in hardwood ½ in.

BACK SPOT FACING MACHINE



■ **Currently announced** by the Taft-Peirce Mfg. Co., Woonsocket, Rhode Island, is this machine designed for counter-boring or facing bosses through which a hole has been drilled—but which, because of an obstruction, it is impossible to counterbore on a drill press.

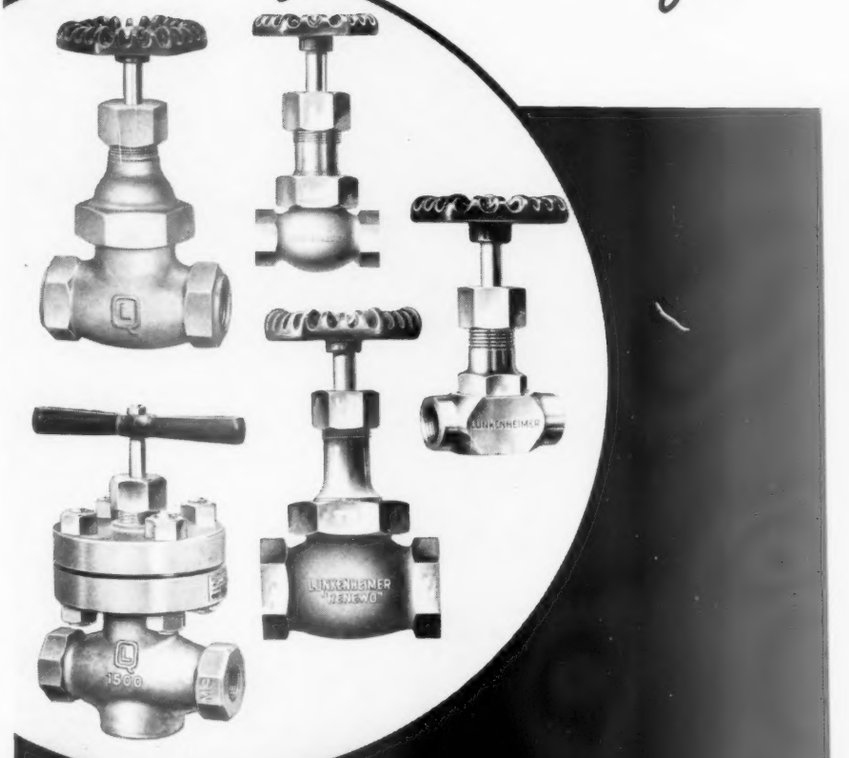
The part to be machined is mounted on a substantial cast-iron table. Near the front of this table is a hole to allow the shank of the inverted counterbore to project through the table. The cutter is driven by a spindle just under the table, the spindle and driving mechanism being of ball-bearing construction and driven through bevel gears by a one-half horsepower motor mounted inside the base. By means of the change pulleys provided, speeds of 170 r.p.m. for steel and 300 r.p.m. for aluminum alloys can be obtained.

The spindle feed is by hand, either through a worm and worm-wheel, or direct by means of a rack and pinion. The spindle is counter-balanced, and the power can be disengaged by a clutch, so as to rotate the spindle freely by hand if desired. The clutch is operated by a foot treadle at the right-hand side of the machine, and is in engagement only when the operator has his foot on the treadle.

The machine is equipped with a coolant tank which is part of the table and the coolant pump is mounted inside the base and driven from the cross shaft.

ACCURATE FLOW CONTROL

means uninterrupted production from the assembly line



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Assure accurate— positive control

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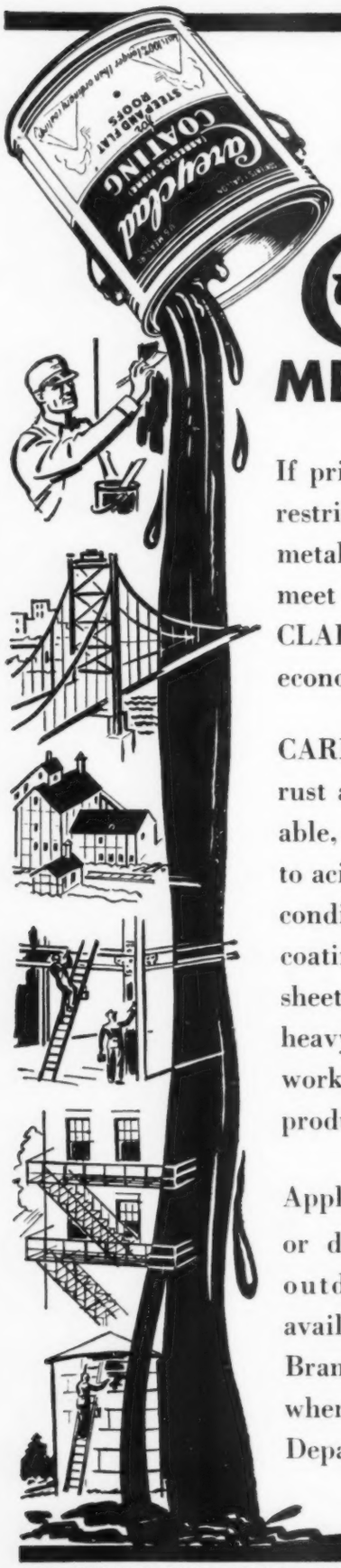

LOW-COST PROTECTION *with* Careyclad BLACK METAL COATING

If priority listings or rationing have restricted your normal supply of metal coatings, CAREYCLAD may meet your requirements. CAREYCLAD does an effective job; it's economical and easily applied.

CAREYCLAD protects metal against rust and weather—is extremely durable, abrasion resistant, and resistant to acid, alkaline and salt atmospheric conditions. It is a practical low-cost coating for metal buildings, iron sheets, structural steel, bridges, heavy machinery, ornamental iron work, and numerous sheet metal products.

Applied by spray painting, brushing or dipping, at everyday indoor or outdoor temperatures. Promptly available in quantity through CAREY Branches and Distributors everywhere. Write for details, address Department 68.

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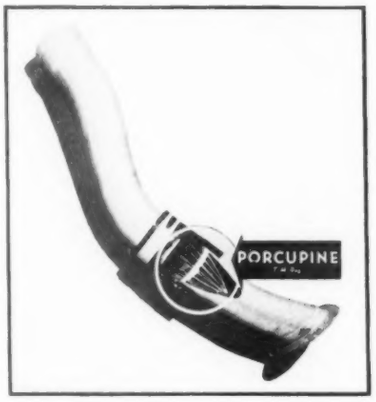
GUARD FOR GASOLINE IN TANK



■ **A low-price** new device designed to guard the gasoline in a gasoline tank is announced by Scully Signal Company, Cambridge, Mass. This anti-siphoning equipment, called the "Porcupine," is easily, quickly installed and involves no locks or keys. To install, it is only necessary to insert it, ball down, completely within the filler neck, cut the string which allows the wires to expand and make contact with sides of the filler neck and, then, with a flexible stick, push the "Porcupine" down the filler neck until it stops. It will automatically lock in proper position in the rubber connection—between the upper and lower pipe fills, as shown in the illustration.

HOIST CRANES

■ **Northern Engineering** Works, Detroit, Mich., offers a line of electric hoist cranes for auxiliary use in large plants—main hoisting in smaller plants.

These cranes are economical in first cost and in operation—easy to handle—built in various capacities up to those large enough to move 15-ton loads. Many different types available include top running or underhung—hand or motor travelled bridges and hoists—transfer types—special double hook types. Cab control is furnished where desired. Jib cranes and self-supporting pillar cranes are important auxiliary types.

All of these cranes are furnished with the hi-lift hoist, a modern, low headroom hoist built with machine tool precision. This hoist is outstanding in design and construction—gives maximum hook lift, insures continuous operation, provides positive control and safer handling.

IS YOUR PRODUCT DESIGNED FOR *Plastics?*

Ask someone in General Electric this question and you'll get the cumulative opinion of experts in every phase of the plastics business.

Is there a material for the job? Can a mold be built? Is the cost practical? Can it be molded easily?

These are questions for chemists, designers, engineers, moldmakers and manufacturing men. The answer will be an opinion compiled from the judgments of all.

That's the way it is at One Plastics Avenue where General Electric conducts a complete plastics operation from development through designing, engineering, moldmaking, laminating, fabricating and all types of molding. It is the basis on which G.E. operates five plastics plants, conveniently located to serve their customers in all parts of the country.

Plastics Department, General Electric Co., One Plastics Avenue, Pittsfield, Mass. Sales offices: Chicago, New York, Rochester, Cleveland, Detroit, Ft. Wayne, Meriden, Lynn, Philadelphia. PD-1

PLASTICS DEPARTMENT

GENERAL ELECTRIC

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WELD FOR HIGH STRENGTH ON MILD STEEL WITH

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No. 78E ELECTRODES

When high quality welds are of major importance, this shielded arc electrode has no superior for all position, high strength welding of mild steel. It is being used with great success for fabricating steel plate, rolled sections and castings, for pipe lines, storage tanks, frames, bridges, for all classes of marine work and for welded fittings on unfired pressure vessels.

Airco No. 78E meets the requirements of A. S. M. E. Boiler Code paragraphs U-68, U-69 and U-70. It has the approval of Lloyds Register of Shipping Class I welding and of the Board of Standards and Appeals of the City of New York, Grade 10, for structural steel welding. Available in all diameters this electrode produces welds developing tensile strengths ranging from 65,000 — 75,000 p.s.i. and has an elongation in 2 inches of 22-28%. This electrode conforms to classification E6010 of A. W. S. and A. S. T. M. Filler Metal Spec. No. A233-407. Ask your nearest Airco representative for full details.

Airco Electrodes are well packed in sturdy containers assuring excellent arrival condition.

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Anything and Everything for GAS WELDING or CUTTING and ARC WELDING

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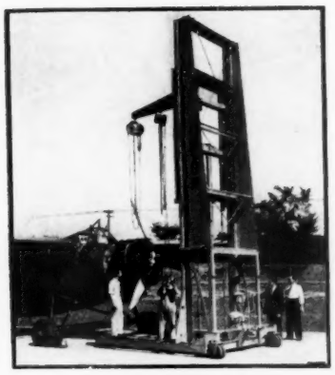
PORTABLE HYDRAULIC ELEVATOR



■ **The Lyon-Raymond** Corporation, Greene, New York, has recently furnished one of the aircraft companies probably one of the largest hydraulic portable elevators ever built. This elevator was designed for installing or removing the engines on large bombing planes. The illustration shows the elevator in use with a small plane.

This elevator has an elevating boom and also a removable elevating platform so that it can be used either with or without the platform. The capacity is 5,000 lbs. The platform, which is not shown in the illustration is 6′ wide by 7′ long. Lowered height of platform 2′, elevated height 16′, elevation 14′. Boom swings 12″ each side of center, operated by hand chain through worm and gear.

The lowered height of boom from the floor to center of pin for chain falls is 9′ 5½″. This pin may be placed 7′ out from carriage or at intermediate points. Elevation of boom 14′.

The unit is 9′ wide overall, 12′ 6″ long and 26′ high. This elevator is equipped with eight 12″ x 4″ rubber tired wheels with ball bearings, front wheels with auto type steer.

Platform and boom are elevated by hydraulic hoist and 3 hp. motor driven hydraulic pump. Elevating and lowering controlled through solenoid valve operated by "dead man" type controller. One station is located on elevating carriage conveniently located to operate from platform and a controller is also mounted at frame base. Cable reel is furnished to carry control wires. Speed of elevation is approximately 12′ per minute.

HEATING DEVICES

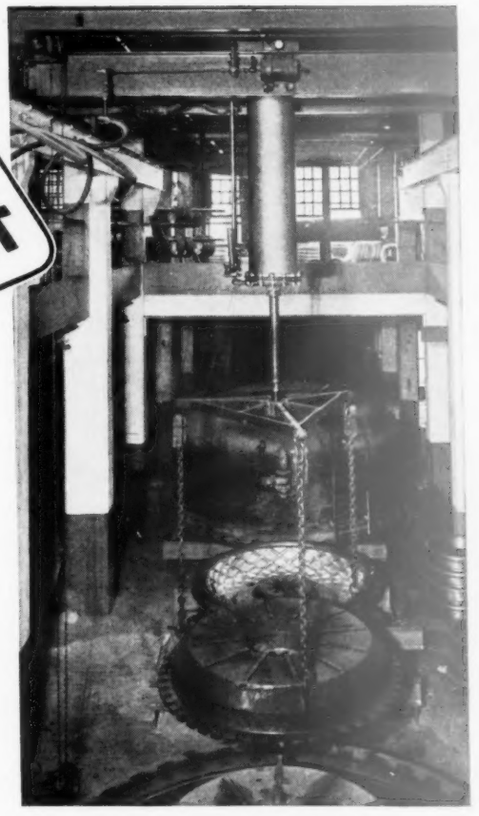
■ **Successful solution** of the problem of eliminating the use of aluminum for reflectors has played its part in two new completely redesigned heat lamps announced by the General Electric appliance and merchandise department, Bridgeport, Conn.

Thorough study and engineering have resulted in an infra-red lamp bulb with

GOODYEAR

Solves a Production Problem With a

CURTIS Air Hoist



★As illustrated above, the Goodyear Tire and Rubber Company last year solved the problem of handling the movement of heavy tire molds and heater lids with a Curtis Air Hoist. Loads average 30,000 pounds with a maximum of 40,000 pounds per operation. Since the installation of this Curtis Air Hoist in 1940, no maintenance whatever has been necessary.

As in hundreds of industrial plants throughout America, Goodyear recognized the advantages of Curtis Air Hoists:

- Low first cost—low operating expense
- Smooth, fast, accurate control of loads
- Light weight—available in pendant, bracketed, and rope compounded types
- Immunity to abuse or overloading
- Fewer production interruptions for servicing
- One man operation—by ordinary labor

If production in your plant includes the hoisting of equipment or materials, it is more than likely that Curtis Air Hoists will speed up your work, release labor for other jobs, and lower production costs at the same time.

For complete information on Curtis Air Hoists and air powered equipment, send the coupon below for free booklet on "How Air Is Being Used in Your Industry."

CURTIS

ST. LOUIS • NEW YORK • CHICAGO • SAN FRANCISCO • PORTLAND

● Please send me your free booklet "How Air Is Being Used in Your Industry" and further details concerning Curtis Air Hoists.

CURTIS PNEUMATIC MACHINERY DIVISION
OF CURTIS MANUFACTURING COMPANY
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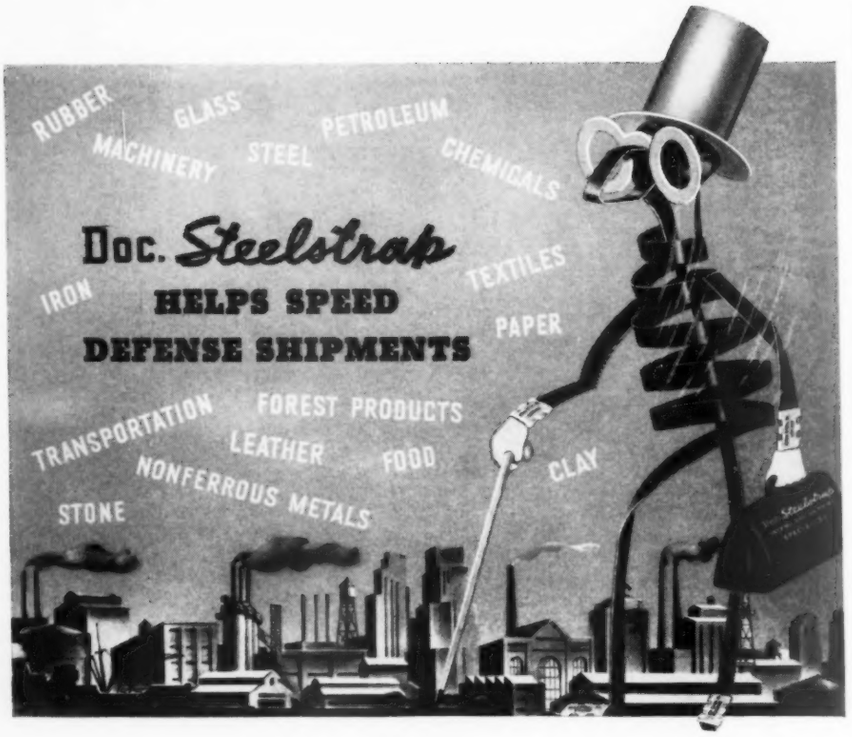

OF ALL AMERICAN INDUSTRIES

● Vital to the success of the *Defense Industry* . . . composite of all American industries . . . is the rapid intra-industry movement of materials and parts . . . the safe delivery of finished products.

By using Acme Steelstrap (for reinforcing individual shipping packs) and Acme Unit-Load Bands (for bracing all types of carload ladings) manufacturers of defense products are conserving man-hours . . . assuring faster delivery . . . eliminating damage and pilferage losses . . . simplifying packing, shipping and carloading procedures . . . utilizing maximum carloading capacity.

LOOK FOR ACME STEEL — ACME STEEL CO. CHICAGO — ON THE SEAL

As in World War I, Acme engineers are cooperating with government authorities, carriers and manufacturers to maintain the acceleration of increased production from source to final destination.

ACME STEELSTRAP MAKES DEFENSE SHIPMENTS
"BOUND TO GET THERE" FASTER

ACME STEEL COMPANY
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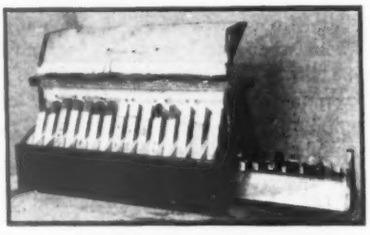
self-contained reflector and fixtures, including a table and a floor model, which couple maximum convenience of use with modern styling.

The same reflector-type lamp is used with both fixture models. It is a 250-watt, 115-volt lamp. The bulb is mushroom in shape to provide the correctly designed reflector behind the filament. Reasonably uniform distribution of the heat rays is provided by the finish and contour of the reflector. At close range, the energy is distributed over a small circle and at high intensity. Exposures taken at greater distances increase the area over which heat is distributed, and at the same time the intensity decreases with the square of the distance.

Because it is sealed within the bulb, the reflector is protected from the tarnishing effects of air, dust and water. Its original condition is preserved to provide maximum reflection efficiency for the life of the filament.

SIMPLE TOOL CARRIERS



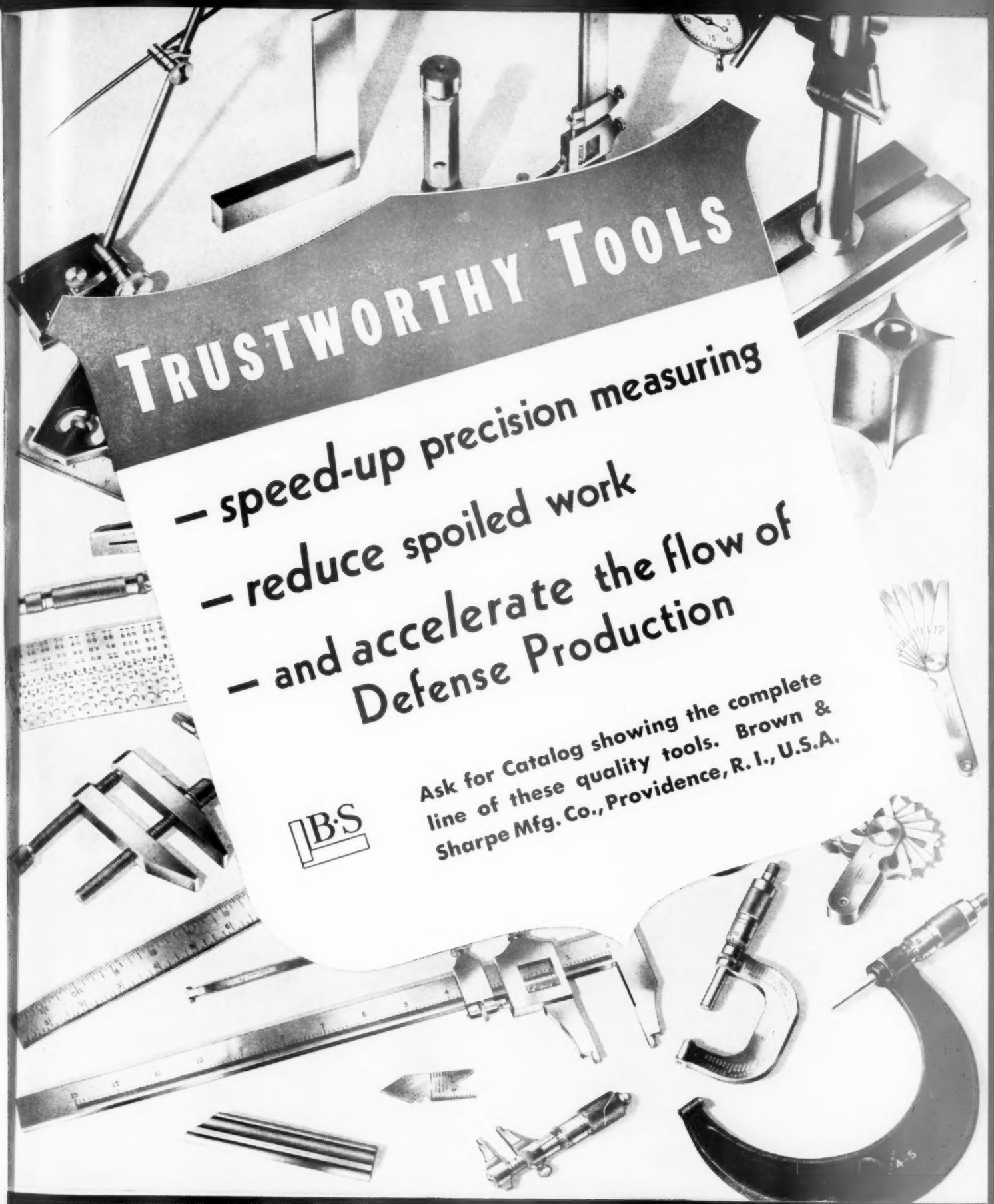
■ **A carbide tool** carrier design which has proven extremely useful, according to Carboloy Co., Inc., in job shops, where a diversity of jobs requires availability at the machine of a fairly wide range of tools is illustrated above.

The kit allows for segregating the tools according to grade, style, and type of work on which used. Facilitating tool handling, such a kit may be kept intact or "loaded to order" in the tool crib and issued as a unit to the machine operator, thus providing, in addition, insurance against possible damage in taking tools to and from machines.

Two other types of tool carriers and extremely simple to produce are designed for picking up and distributing of carbide tools generally. The first consists of a wooden block with holes drilled through and a board screwed to the bottom.

The second is a wooden box with partitions, which may be used for either single point or end cutting tools. Separate boxes are recommended for handling carbide tipped milling cutters, shell and end mills, etc.

In one instance these kits are distributed to each operator and picked up daily for regrinding. Usually only a brief "touch up" sharpening is required.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– speed-up precision measuring
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– and accelerate the flow of Defense Production
Ask for Catalog showing the complete line of these quality tools. Brown & Sharpe Mfg. Co., Providence, R. I., U.S.A.
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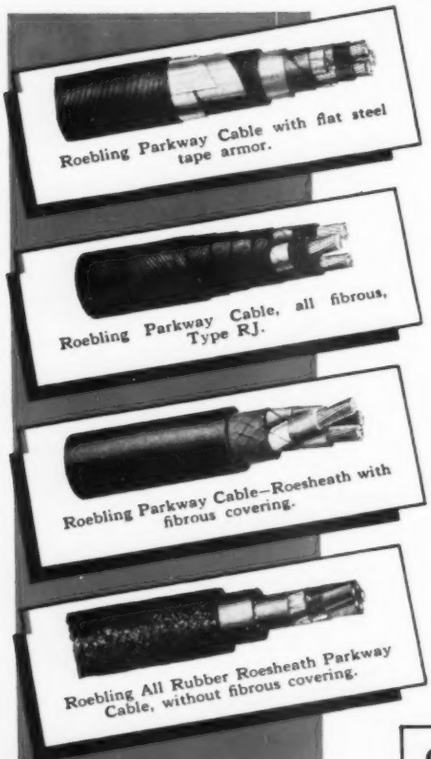
BROWN & SHARPE TOOLS

ROEBLING

Parkway Cables

–FOR EXTRA POWER

WITHOUT CONDUITS OR MANHOLES!



Roebling Parkway Cable with flat steel tape armor.

Roebling Parkway Cable, all fibrous, Type RJ.

Roebling Parkway Cable—Roesheath with fibrous covering.

Roebling All Rubber Roesheath Parkway Cable, without fibrous covering.

Here's a safe, easy way to extend power distribution circuits. Roebling Parkway Cables can be laid directly in a shallow trench—often only 2 feet deep.

That means the expense of conduits and manholes can be eliminated on a wide variety of underground power circuits, such as. series street lighting, parkway lighting, signal and fire alarm circuits, industrial floodlighting, airport lighting, etc.

For extra protection against impact stresses, crushing or puncture a steel tape armor is used. Recent development of a tough, moisture resistant rubber compound (Roesheath) makes available a lighter, more flexible cable that is suitable for the most severe service conditions.

These cables are available in single and multiple conductors, solid or stranded. With or without lead sheathing and metal tapes in a variety of insulations.

OVER 60 OTHER TYPES

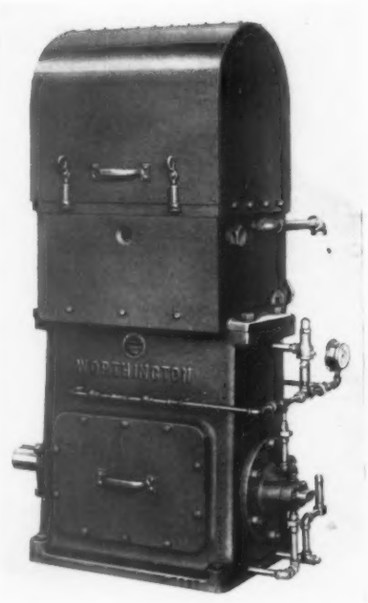
of Roebling Electrical Wires and Cables are made in our mills under complete Roebling supervision and inspection—from copper bar to final reeling or spooling. They include: Power Cables, Weatherproof Wire, Bare Wire and Strand, Building Wire, Portable Cords and many others.

JAR ROEBLING

JOHN A. ROEBLING'S SONS COMPANY

TRENTON, NEW JERSEY Branches in Principal Cities

LIQUID COOLING SYSTEMS



■ **During the** past year Worthington Pump and Machinery Corp., Harrison, N. J., has developed a new line of liquid cooling systems for air conditioning and industrial process requirements. The centrifugal compressor is of the volute design as opposed to the diffuser design that has heretofore been used in the centrifugal refrigeration field.

Many new and unusual features are incorporated in this design, notably dual lubrication, balancing of end thrust and side thrust by arrangement of impellers and volutes. These systems are available in a wide variety of sizes covering a range from approximately 150 tons refrigerating effect to 1200 tons refrigerating effect.

This product has had a very wide use in the National Defense Program in connection with air conditioning of "Black out" or controlled temperature plants for the precision manufacture of aircraft and aircraft engines.

NEW DRUM CONTROLLERS

■ **A new line** of drum controllers for small cranes and hoists is announced by Cutler-Hammer, Inc., Milwaukee, Wis. Small and compact in size, these drums have several features of outstanding interest.

A rope operating lever, embodying an equalized torque principle, entirely eliminates cumbersome sheave wheel, rope guard and external return spring, and provides smooth, easy operation even when the rope is pulled at an angle.

An anti-plug feature increases drum life by making it impossible to whip

PRE-ASSEMBLED FASTENER UNITS

Lock washer is free to rotate and can't drop off!

FOR COMPLETE INFORMATION WRITE TO ANY OF THE FOLLOWING FASTENING MANUFACTURERS

AMERICAN SCREW COMPANY
PROVIDENCE, RHODE ISLAND

CHANDLER PRODUCTS CORPORATION
CLEVELAND, OHIO

CONTINENTAL SCREW COMPANY
NEW BEDFORD, MASSACHUSETTS

RELIANCE SPRING WASHER DIVISION
EATON MANUFACTURING COMPANY
MASSILLON, OHIO

THE LAMSON & SESSIONS CO.
CLEVELAND, OHIO

THE NATIONAL SCREW & MFG. CO.
CLEVELAND, OHIO

PHEOLL MANUFACTURING CO.
CHICAGO, ILLINOIS

SCOVILL MANUFACTURING COMPANY
WATERBURY, CONNECTICUT

SHAKEPROOF Inc.
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THE STEEL COMPANY OF CANADA, LTD.
HAMILTON, ONTARIO, CANADA

LICENSOR: ILLINOIS TOOL WORKS . . . . . CHICAGO

When writing Illinois Tool Works please mention Purchasing

drum from full forward to full reverse position. Drum can be reversed quickly, but yet a definite time delay is required in the off position.

They are available in self-centering rope lever, self-centering and non-self-centering radial lever types, for four or six speeds.

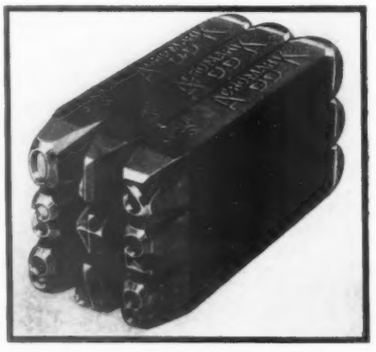
ODORLESS PAINT

■ **An improved** paint, designed for use in plants and offices where odors from conventional paints are offensive to workers, has been announced by American-Marietta Co., Chicago, Ill. Not perfumed but actually de-odorized before being canned, it makes possible painting in winter or summer without discomfort. Windows may be kept closed while the paint is being applied. The product sets in three hours, and is completely dry in 12 to 15 hours.

It may be used on plaster, wall board, wood, cement, brick or metal, and is available in flat, egg-shell and gloss finishes. Coverage is 700 square feet to the gallon, with hiding power that makes possible one-coat jobs in many applications. Of heavy consistency, ease of brushing speeds application 10 to 25 per cent above conventional wall paints. It may be applied with a spray gun when cut with one pint of the proper thinner to one gallon of paint. Flat and egg-shell finishes may be stippled.

All finishes are washable, and colors are designed not to fade or dull with repeated washings. High reflectivity reduces light requirements. Colors available are white, cream, ivory, buff, grey, blue and green.

STEEL LETTERS & FIGURES



■ **Steels as hard** as Brinell 380 Rockwell "C" scale 40, can now be successfully stamped by use of double duty steel letters and figures developed by The Acromark Corporation, Elizabeth, N. J.

Note the extra heavy bevel and depth of character, also the over size and extra height body of each stamp shown in the illustration. If you've had trouble getting stamps that will mark stainless steel, forged parts, and half hard metals, this is your answer.

Each steel letter and figure is individually engraved and hand finished for accuracy. The business end of each stamp is tapered to the character so you can see where you are stamping and the characters are square on the stamp.

Hardened, tempered and individually tested by nationally known experts in heat treating these stamps have already enabled at least one large manufacturer to cold stamp steels that were formerly stamped hot, thereby eliminating the slow operation of heating each part to white heat and suffering possible loss from heat cracks and decarburization.

FLOOR CLEANER AND DUST CONTROL

■ **A chemical preparation** in liquid form which simplifies and speeds up the daily job of floor maintenance in offices, factories, hospitals, schools, department stores, and other places where floor areas are large is manufactured by The Garland Co., Cleveland, Ohio. It does five important jobs at once.

This material cleans floors quicker than ever before possible, two to three times as fast as other methods.

Leaves a microscopically thin film on the floor which attracts and holds dust blown or tracked into the building between cleanings, keeps that dust below the breathing level. Result—more sanitary, healthier, working conditions. In one measured instance, this method reduced atmospheric dust count 75%.

This thin residual film also serves as a buffer between traffic and finish on floor—protects floor against scuffing, retards "traffic-laning". Further, film im-

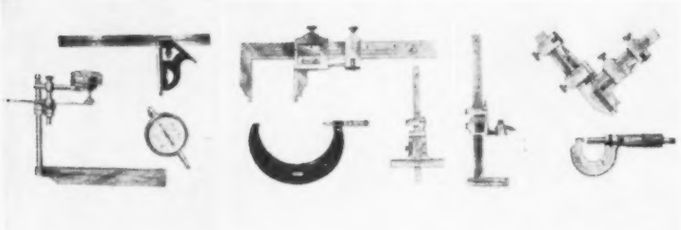
To the Men Behind the Men Behind the Guns

The L. S. Starrett Company takes this opportunity to pay tribute to the thousands of skilled craftsmen whose ability and energy have made America what it is today . . . and whose loyalty and integrity are helping to keep it that way.

THE L. S. STARRETT CO., ATHOL, MASSACHUSETTS

World's Greatest Toolmakers

Precision Tools . . . Dial Indicators . . . Ground Flat Stock
Hacksaws . . . Metal Cutting Bandsaws . . . Steel Tapes



STARRETT TOOLS

. . . CHALLENGE ACCEPTED

The gauntlet has been hurled . . . A fighting America has accepted the challenge. We did not start this war, but it is the job of *each and every one of us* to make certain that America finishes it—*right!* Even selfishly, all we have to give is the very least we can give.

Our business is Adhesives—gums, glues, pastes for over 100 different industries and for many private uses. Adhesives are not gunpowder—nor armorplate. Yet they play their parts—both directly and indirectly—in many lines of war and defense.

Whatever may be required of us—in production facilities, factory space or man power—by our Government or by those supplying our Government—we will deliver to our utmost.

In addition, we are happy to go on record with the fact that 100% of our organization—in all our offices, laboratories and factories—are owners of United States Defense Stamps or Bonds.

To those of our customers who are not directly engaged in war or defense work . . . We know that America will win this fight. We know well that we will always need and value your patronage—as we have in the past, as we do today. We ask your patience, when and if we cannot always fill *over night* each and every one of the 9,000 adhesive formulae on file in our laboratories.

THE ARABOL MANUFACTURING CO.

PIONEERING SINCE 1885

NEW YORK · BROOKLYN · CHICAGO · SAN FRANCISCO

When writing The Arabol Manufacturing Co. please mention Purchasing

parts attractive low-lustre sheen to floor, restores that "new look" with each cleaning.

Cost is low—a single gallon cleans, protects, and controls dust on approximately 10,000 square feet of sealed or varnished floor.

Because of time, material, and labor savings—because it often doubles the life of the floor finish—it has been proved that this method can actually cut the overall cost of floor maintenance in half.

Applied with ordinary string mop, this material is for use on wood floors (sealed or waxed), terrazzo, inlaid linoleum, clay tile, cork, asphalt, or enameled concrete floors. It is not recommended for unsealed wood floors.

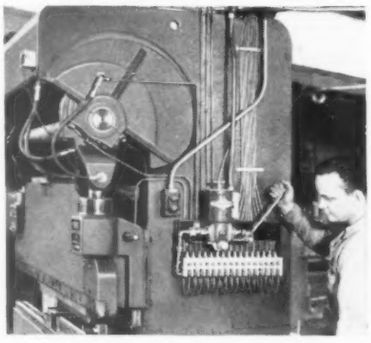
LINOLEUM DRESSING

■ **A non-glossy** dressing for conditioning linoleum counter, table, and desk tops has been introduced by the Yawman and Erbe Mfg. Co., Rochester, New York.

This preparation when applied periodically, will revitalize old grimy linoleum tops, giving them a fresh, clean appearance. When applied to new tops, it seeps into the pores of the linoleum and acts as a protective coating, which lengthens the life of the linoleum.

Application requires a minimum amount of time and energy. First, clean the linoleum with mild soap and water, and wipe dry. Next apply dressing sparingly and allow it to remain on the linoleum for at least ten minutes—then wipe off any surplus remaining on the surface. The result is a smooth, clean surface having the appearance of new linoleum.

LUBRICATING SYSTEMS

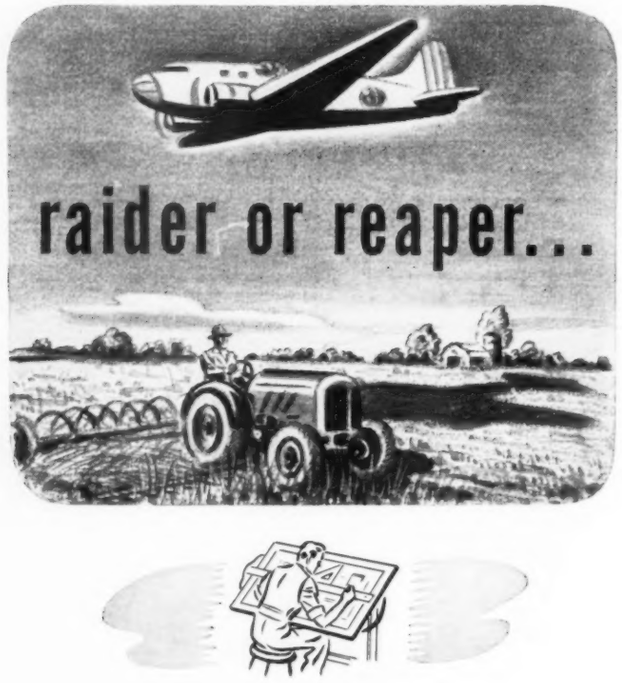


■ **Lincoln Engineering Company,** St. Louis, Missouri, have incorporated many new features in their latest centralized lubricating system. Now in wide use on industrial machinery of all kinds, it is an easily installed system for lubricating all bearings. The system consists of a number of injectors—one for each bearing to be lubricated, each connected to the bearing by tubing or flexible high-pressure hose as required, and each individually adjusted to discharge the required amount of lubricant. The injectors can be mounted singly or in manifold and are supplied with lubricant from a central pumping unit.

An outstanding feature is the single lubricant supply line between the pumping unit and the injectors. Another feature is the wide range of pumping units now available, and the varied types of control. The pumping unit on the installation illustrated, is the new 2-lb. pump. It can be easily mounted right on the machine, and a few strokes of the handle delivery lubricant to all bearings. Other pumping units with 30-lb. capacity, as well as pumps that handle lubricants direct from 100-lb. and 400-lb. capacity original drums are also available, and the entire systems can be either electrically operated with push button control, or entirely automatic with time clock control.

BLACK FINISH FOR IRON AND STEEL

■ **In many** defense plants the Jetal process, original patented method of blackening iron and steel, is confirming in actual production the extraordinary results of comparative laboratory tests. As a result of these extensive tests, Alrose Chemical Co., Providence, R. I., now announces and guarantees that the process will—give 250% more abrasion and wear resistance than any black fin-



. . it's Arkwright across the board. For draftsmen know that the quality of Arkwright Tracing Cloths never varies. They know that Arkwright standards stand . . in war as well as in peace!

Smoothness of surface, permanent transparency, ability to take erasures without smudging–that's what Arkwright quality has always meant. And that's what it means today . . what it will continue to mean. What's more, delivery is as prompt, as dependable as ever.

Since there are four brands of Arkwright Tracing Cloths, one is bound to be suited to your type of work. So why not write for free samples – and new catalog? Arkwright Finishing Company, Providence, Rhode Island.

Arkwright TRACING CLOTHS

"AMERICA'S OLDEST AND FINEST"

Sold by Leading Drawing Material Dealers Everywhere

When writing Arkwright Finishing Company please mention Purchasing

Here's ONE "substitute" that's actually an improvement!

DBL HIGH SPEED STEEL

★ DBL High Speed Steel meets the tungsten supply situation and OPM orders. Although it contains less than ⅓ as much tungsten as 18-4-1, DBL fully replaces 18-4-1 in performance. It cuts as well or better in 85-90% of all cases—you won't lose a single minute's production. It heat-treats in the same equipment and by the same methods as 18-4-1, too—you'll have nothing new to learn, nothing new to buy. As a bonus value, DBL costs 16% less than 18-4-1 and weighs 8% less—you get more pounds per dollar, and more tools per pound.

Changing over to DBL High Speed Steel actually brings you advantages. Under free license, DBL is also produced by other tool steel manufacturers. Identify it by the following analysis:

Analysis		
	C	.75 — .85
	Cr	3.50 — 4.50
	W	5.00 — 6.00
	Mo	4.00 — 5.00
	V	1.25 — 1.75

THE DBL "BLUE SHEET" CONTAINS FULL TECHNICAL DATA . . . SEND FOR YOUR COPY

ALLEGHENY LUDLUM
STEEL CORPORATION — PITTSBURGH, PA.
Tool Steel Division — *Watervliet, N.Y.*

Allegheny Ludlum Steel Corporation T-105
Oliver Building, Pittsburgh, Penna.
Send me a copy of the "DBL Blue Sheet."

NAME _____

COMPANY _____

ADDRESS _____

ish on the market; resist rust 50 hours and more in salt spray test, when after-treated with Jetoil; save half the time required to obtain above results, as compared with any other method; and effect 30% or more savings in price, treatment time, and wear resistance.

Unaffected by priority restrictions, it replaces strategic materials and is available for immediate delivery in any quantity. No skill, elaborate equipment or electric current are required. Because of its unusual features, the process is rousing keen interest throughout the defense industry. Samples and consultation service are offered by the company.

PLASTIC HANDLES

■ **Colorful plastic** handles for drawers, doors, and many other applications, are now offered by Continental Plastics Corporation, Chicago, Ill.

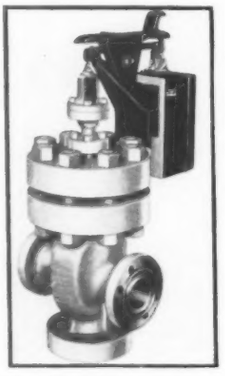
Pointing out that only non-restricted acetate plastics are used in the production of the handles, the manufacturer emphasizes ability to assure immediate delivery in any quantity.

They harmonize with current design trends in a wide range of products, such as home and office furniture, industrial equipment, electric appliances, stoves, radios, refrigerators, kitchen cabinets, store and bar fixtures, in fact, any equipment where handles are used and a color accent is desired.

They are available in red, green, blue, ivory and black colors; are highly resistant to cracking and chipping, and cannot fade or tarnish. Design and purchasing executives may obtain free samples.

POWER CONTROL VALVE

■ **The power control valve** for high pressure installation from 1800 to 2500 lbs. is announced by the Consolidated Safety Valve Division of Manning, Maxwell & Moore, Inc., Bridgeport, Connecticut.

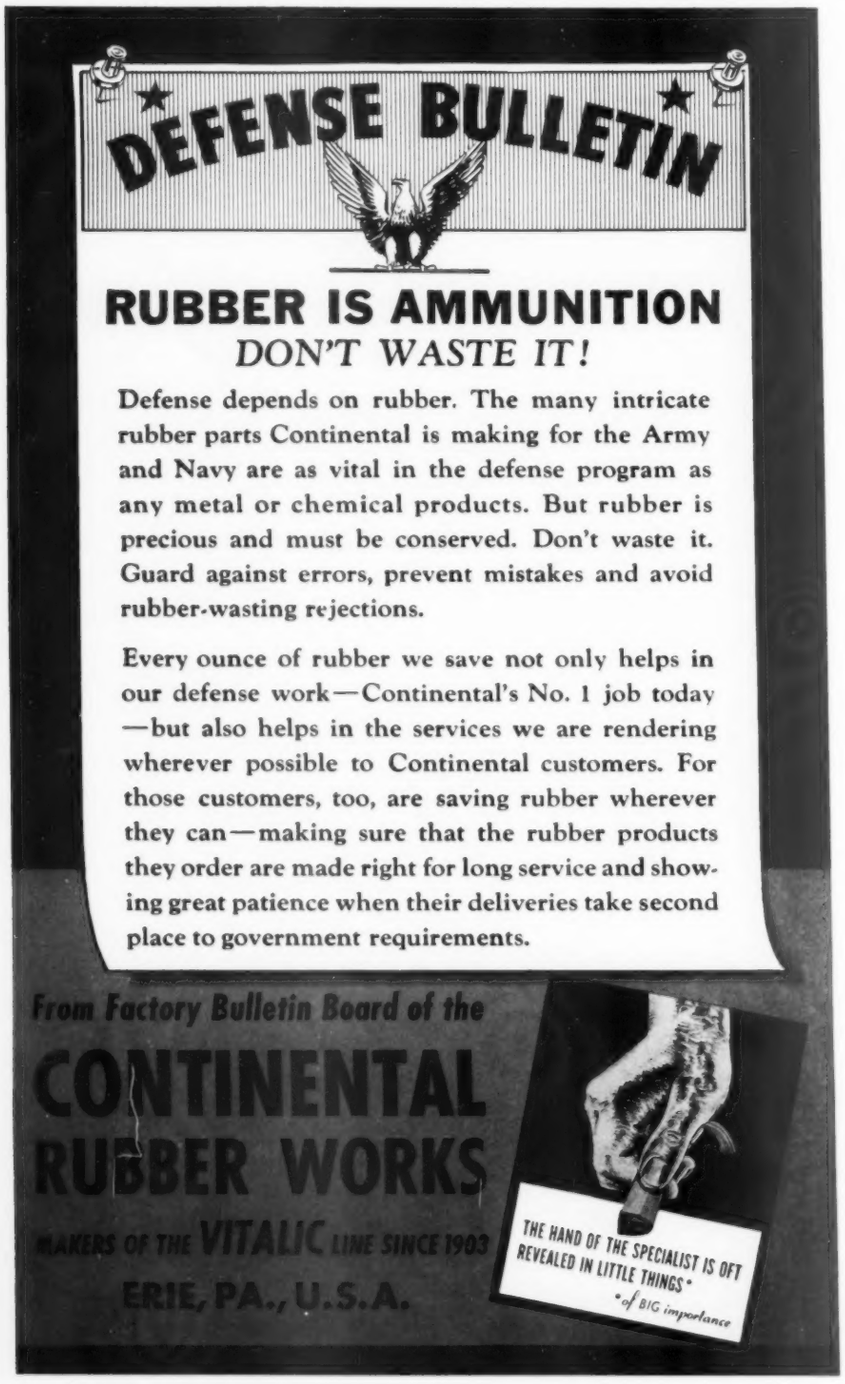


It is an automatic relief valve that may be set for a 1% or less difference between opening and closing pressure; which effects a large saving over the 4% required for the spring loaded safety valves. The immediate results are more accurately balanced boiler operation at peak loads and more uniform line pressure. In addition, its use reduces spring-loaded safety valve maintenance expense.

The valve is set to open at a slightly lower pressure than any of the safety valves, making it possible to continue a more even rate of steaming with a more uniform line pressure.

The principle of operation is very simple. The boiler drum or superheater outlet pressure or steam header pressure actuates a pressure control set at the popping pressure, which operates an electric contact on a difference in pressure of 1% or less. The electric current is transmitted to a solenoid which opens and closes the pilot valve. When it opens it unbalances the pressure over the main valve disc and it opens and remains open until the pilot valve is closed. The whole cycle of operation is almost instantaneous. The valve opens exactly at the popping pressure and it closes cleanly with an extremely low blowdown. High superheat temperatures have no effect on its action. It may be operated manually from the control station.

It is not intended to replace the spring-loaded safety valve, but rather it is a supplementary operating valve, designed to conserve power and increase the efficiency of the steam generating plant.


DEFENSE BULLETIN
RUBBER IS AMMUNITION
DON'T WASTE IT!
Defense depends on rubber. The many intricate rubber parts Continental is making for the Army and Navy are as vital in the defense program as any metal or chemical products. But rubber is precious and must be conserved. Don't waste it. Guard against errors, prevent mistakes and avoid rubber-wasting rejections.
Every ounce of rubber we save not only helps in our defense work—Continental's No. 1 job today—but also helps in the services we are rendering wherever possible to Continental customers. For those customers, too, are saving rubber wherever they can—making sure that the rubber products they order are made right for long service and showing great patience when their deliveries take second place to government requirements.
From Factory Bulletin Board of the
CONTINENTAL RUBBER WORKS
MAKERS OF THE VITALIC LINE SINCE 1903
ERIE, PA., U.S.A.
THE HAND OF THE SPECIALIST IS OFT REVEALED IN LITTLE THINGS*
*of BIG importance

HOW TO GET CAPACITY OPERATION

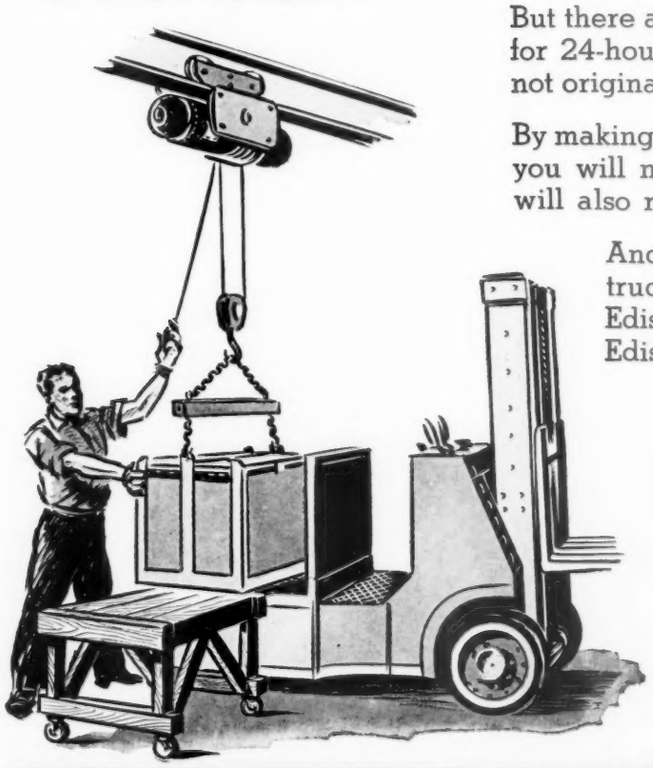
FROM YOUR BATTERY INDUSTRIAL TRUCKS

Do it with this combination . . .

Two 12-hour batteries per truck, or . . .

Three 8-hour batteries per truck, and . . .

Quick battery exchange equipment



MOST battery industrial trucks now going into service are being equipped with adequate battery capacity for 24-hour-a-day operation.

But there are many older trucks which can be batteried for 24-hour service even though such a schedule was not originally provided for.

By making sure all your trucks are adequately batteried, you will not only get more work from them, but you will also reduce your handling costs.

And when 24-hour duty is needed, a battery truck gives it with the utmost dependability. Edison Storage Battery Division of Thomas A. Edison, Incorporated, West Orange, New Jersey.

Edison
STEEL *Alkaline* BATTERIES

When writing Edison Storage Battery Division please mention Purchasing

PERSONALITIES *in the* NEWS

James R. McColm has been appointed Purchasing Agent for the Westinghouse Electric Supply Co., Portland, Oregon. Mr. McColm formerly served with the company in this same capacity, but was transferred to sales work about three years ago. Buying problems of the present emergency, calling for specialized experience in the purchasing office, caused him to be drafted once more for his former position.

Thomas A. Barry has been appointed Purchasing Agent for the City of Lawrence, Mass., succeeding Maurice F. McKenna, retired.

Harold K. LaRowe has resigned as Assistant Purchasing Agent for the Dairymen's League Cooperative Association, New York City, to accept a position as Purchasing Agent for Chemical Construction Corp., division of the American Cyanamid Company, with offices in New York. Mr. LaRowe is a past president of the New York Association.

Major Joseph L. Ernst, formerly Purchasing Agent for the Rochester (N.Y.) Board of Education, now on active procurement duty with the Quartermaster Corps, U. S. Army, addressed the recent convention of the Public School Business Officials at Atlantic City, on "Procurement Under the Present Emergency."

Paul Burroughs, Purchasing Agent for the Rochester (N.Y.) General Hospital, addressed the recent Institute on Hospital Purchasing, held at Johns Hopkins University, Baltimore. His discussion covered four phases of the buyer's work: Forms and Records, Personnel, Reference Material, and Desirable Contacts.

William G. Hubner, formerly Purchasing Agent for A. M. Castle & Co., steel importers of San Francisco, has been appointed Purchaser of Supplies for the City of San Francisco. Mr. Hubner is a past president of the Northern California Association and served as Vice President of the N.A.P.A. for District No. 1.

Robert Claggett has been appointed Purchasing Agent for the Newfoundland base contractors at Marquise, Argentia, Newfoundland.

John Townley, formerly Assistant Purchasing Agent for the City of Atlanta, Georgia, and more recently associated with the Randall Brothers Coal Company of that city, has been elected a member of the Fulton County Board of Tax Assessors.

Charles D. Smith has been appointed Purchasing Agent of the Alco Valve Co., St. Louis.

Russell Forbes, Commissioner of Purchase for the City of New York for the past eight years, resigned from that position on December 15th to become Vice President and General Manager of Air Cargo, Inc. Mr. Forbes has been a leader in the purchasing field for the past two decades, and is the recognized authority on governmental buying. As Assistant Secretary of the N.A.P.A. from 1923 to 1928, he was responsible for a great advance in the businesslike administration and expenditure of public funds, writing many of the statutes which govern state, county and municipal purchasing, working for the passage of proper legislation, and counseling governmental buyers. His book on "Governmental Purchasing," published in 1929, is still the standard text and guide on the subject. In his later work as Secretary of the Nationa'

Write for this

NEW Catalogue

•

Self Lubricating

BRONZE BEARINGS

● This new book will save you time, trouble and money when ordering self-lubricating bushings or bearings. Thirty-six pages filled with useful, informative data will help you to accurately determine your needs. A complete listing of over 2000 individual sizes . . . including plain, flanged and spherical bearings . . . will help you design to standards thereby eliminating delay and die expense.

Competitive tests in practically every type of industry have definitely proven the superiority of Johnson Bronze LEDALOYL. Our exclusive process of PRE-ALLOYING the basic materials provides bearing qualities not obtainable by any other method.

Write for your free copy of this new book today. It will help you get better bearings—quicker. It is your first step toward improved bearing performance.

Ledaloyl
PROVIDES THE RIGHT AMOUNT OF OIL IN THE RIGHT PLACE AT THE RIGHT TIME

JOHNSON BRONZE
Sleeve BEARING HEADQUARTERS
450 S. MILL STREET · NEW CASTLE, PA.

When writing Johnson Bronze please mention Purchasing

GETTING THE *MOST* FROM YOUR THERMAL INSULATIONS...

MAKE SURE THE MATERIAL
IS RIGHT FOR THE SERVICE...
NUMBER 1 in a series of messages to American industry devoted to conserving heat, improving operation and increasing production through modern insulation practice.

There can be no compromise in specifying the fabric for a parachute—for obvious reasons. And thermal insulations, which are industries' protection against heat loss, should be as carefully chosen for the temperatures and service conditions involved. The failure of an improperly used insulation is seldom dramatic, but always costly.

In times like these, when increases in steam pressures and process temperatures are the rule, it is sound practice to check your present insulating materials—and your insulation requirements—and to specify the proper Ehret insulation for your particular service needs.

★ **EHRET'S 85% MAGNESIA** and many other Ehret heat insulating materials are fully treated, both as to selection and application, in the new 176 page Heat Insulation Handbook. It will be furnished, without obligation, to those interested in getting the most from their thermal insulations. Write today for your copy of Handbook E 201.

EHRET MAGNESIA MANUFACTURING CO.
VALLEY FORGE, PENNA.

...THERE IS AN *EHRET* DISTRIBUTOR OR CONTRACTOR IN EVERY INDUSTRIAL AREA

When writing Ehret Magnesia Manufacturing Co. please mention Purchasing

Municipal League and as Professor of Government at New York University, his interest in efficient buying continued, and he served as consultant for the reorganization of many governmental buying units. Among other projects, he was largely instrumental in formulating the revised statute to centralize purchasing in New York City, in 1933. When Mayor LaGuardia was elected in that year on a platform of honest and businesslike administration, he invited Forbes to install and administer the new system. His outstanding success in this large and difficult assignment is well known. He has expended nearly 250 million dollars for the City, and not one of the thousands of purchases of supplies, materials and equipment has been tainted by political considerations. In addition to his municipal duties, he is currently serving with the Office of Civilian Defense in Washington. He leaves public office with his department and policies well established and respected in all phases of the city administration. Air Cargo, Inc., is a new organization backed by United Airlines, American Air Lines, Eastern Air Lines, and Transcontinental & Western Air, Inc. It is devoted to research and promotion of air-freight, looking ahead to the post-war economic world when this service is destined to play an ever increasing part in our national life.

Albert Pleydell

Albert Pleydell, formerly Deputy Commissioner of Purchase for the City of New York, succeeds Dr. Forbes as Commissioner. He has had an active part in the development of the department and is exceptionally qualified to carry on the work.

F. J. McLaughlin, veteran Purchasing Agent of the Pontiac Motor Division of General Motors, Pontiac, Mich., has been named Assistant to the General Manager, in charge of all supplies, both automotive and defense. Fred Gordon, formerly Assistant Purchasing Agent, becomes Automotive Purchasing Agent, with Martin Rummel as Assistant Purchasing Agent in this division. L. Redford, Jr., continues as Defense Purchasing Agent for the company, with H. F. Decker as Assistant Purchasing Agent.

Norman Loomis has resigned as Purchasing Agent of the Lake Erie Engineering Co., Buffalo, N. Y., to join the Bell Aircraft Co. of the same city.

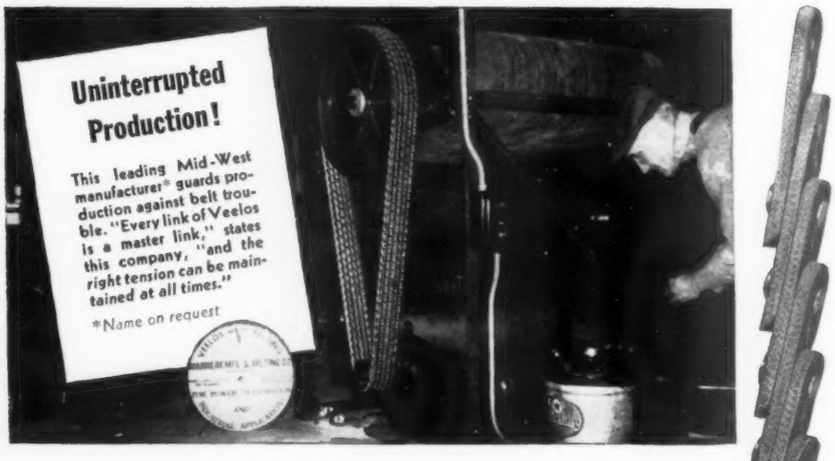
J. C. Eismann has been appointed Purchasing Agent of the Dayton (Ohio) Oil Co., succeeding D. S. Hopping.

C. A. Rooke has been appointed Purchasing Agent for the Master Products Co., Cleveland, succeeding C. J. McCarthy, who has transferred to the sales department of the company.

W. R. McConnell, formerly Director of Purchases for the Aluminum Company of Canada and affiliated companies, has been appointed Assistant to the President, Tube Reducing Corp., Wallington, N. J.

Joseph Primeau, Purchasing Agent for the St. Francis Hotel, San Francisco, is the author of an article on "Hotel Purchasing in the Emergency" in a recent issue of *Western Hotel and Restaurant Reporter.* Mr. Primeau is President of the Northern California Purchasing Agents Association.

John Kemendo has resigned as Purchasing Agent for Geophysical Service, Inc., Dallas, Texas, to become Assistant

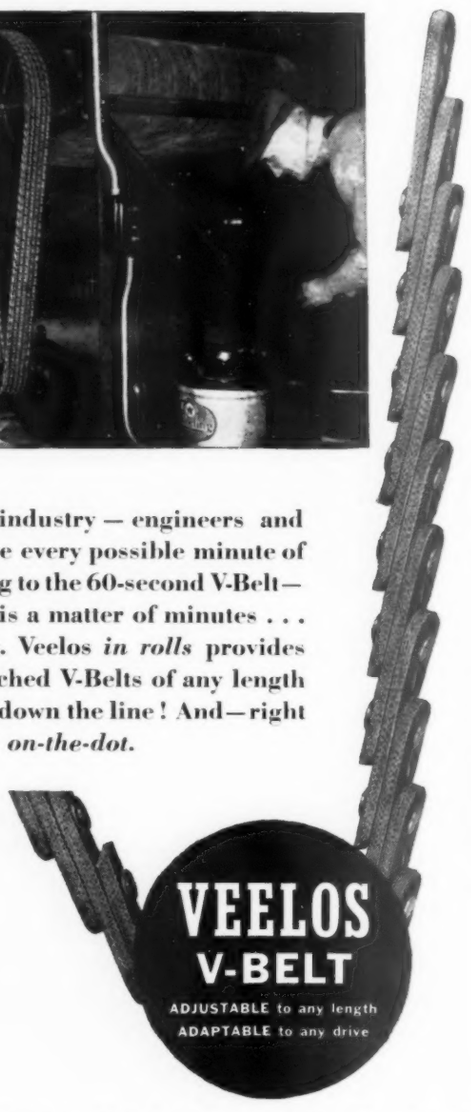

Uninterrupted Production!
This leading Mid-West manufacturer* guards production against belt trouble. "Every link of Veelos is a master link," states this company, "and the right tension can be maintained at all times."
*Name on request

THE "minute men" of industry — engineers and shop men who must save every possible minute of production time—are turning to the 60-second V-Belt—Veelos in rolls. Installation is a matter of minutes . . . adjustment is fast and easy. Veelos *in rolls* provides an automatic supply of matched V-Belts of any length . . . speeds production right down the line! And—right now—*Veelos deliveries are on-the-dot.*

JOIN THE MINUTE MEN!

Why not save valuable production time yourself? Let a Veelos sales engineer—especially trained in power transmission work—tell you how Veelos in rolls can boost your production without any increase in horsepower or manpower.

MANHEIM MANUFACTURING & BELTING CO., MANHEIM, PA.



When writing Manheim Manufacturing & Belting Co. please mention Purchasing

G-E WIRING MATERIALS KEEP FACTORY MACHINES BUSY

NERAL ELECTRIC...12 R 600 V...CODE GRADE
ECTRIC...12 RP 600 V...PERFORMANCE GRADE
RIC...12 RH 600 V...HEAT RESISTANT GRA
...12 RW 600 V...MOISTURE RESISTANT G
A MANUAL OF MODERN METHODS AND MATERIALS
ADEQUATE WIRING FOR INDUSTRY

By selecting G-E Wiring Materials for new wiring systems and for modernization of present wiring you'll avoid interruption of production due to wiring breakdowns. G-E conduits, wires and cables and wiring devices all have high quality. They are durable and will give long, dependable service. For convenience, anticipate your requirements as much as possible. G-E Wiring Materials Distributors are located at all key points in the country. The variety of wiring materials in the big G-E line will help you obtain materials suited to your needs.

★★★★★★★★★★**FREE WIRING MANUAL**

A G-E manual, "Adequate Wiring for Industry," will help in the selection of wiring materials. This manual outlines modern wiring practices adaptable to all factories. For a free copy of this manual and for more information about G-E Wiring Materials see the nearest G-E Merchandise Distributor or mail the coupon.

GENERAL ELECTRIC

General Electric Company
Section CDW-2771
Appliance and Merchandise Dept.
Bridgeport, Conn.

Sirs: Please send me free a copy of "Adequate Wiring for Industry" with information about G-E Wiring Materials.

Name.....

Address.....

City..... State.....

When writing General Electric Company please mention Purchasing

★ ★

250 Ways to SAVE High Speed Steel

With High Speed Steel strictly allotted and getting more scarce hourly, every tool room, die shop, machine shop and metal fabricating plant is vitally interested in saving high speed steel, in making this essential cutting metal go as far as it possibly can.

There is one universally recognized way to make high speed steel go much farther, 10 times as far, and to do so with an increase, rather than a loss of efficiency. That is in ARMSTRONG TOOL HOLDERS. In an ARMSTRONG TOOL HOLDER each ounce of high speed steel becomes productively equal to 10 ounces in a forged tool. This is universally recognized, but the extent to which ARMSTRONG TOOL HOLDERS can be used is not so widely known. The complete Armstrong System provides Tool Holders for *every* operation on Lathes, Planers, Slotters and Shapers, for many operations on Turret Lathes and Screw Machines—more than 250 types, shapes and sizes of tool holders . . . more than 250 ways to reduce high speed steel requirements by 90%.

It is to you who at this point are thinking, "But we already use ARMSTRONG TOOL HOLDERS," that this appeal is especially directed, for though 96% of the machine shops and tool rooms of America use ARMSTRONG TOOL HOLDERS, many do not use them wherever possible. If every time a forged tool is used unnecessarily, high speed steel capable of doing 10 times as much work is consumed, it becomes our job and your job under the present shortage to ferret out such cases and see that tool holders are used instead. The best way to avoid needless waste of high speed steel is to check your present machining methods, operation by operation, with an up-to-date Armstrong (C-39) Catalog* that shows the complete Armstrong System of Tool Holders. By doing so you can go far toward answering America's high speed steel problem.

* C-39 Catalogs will be sent to those requesting them from Armstrong Bros. Tool Co., "The Tool Holder People," 303 N. Francisco Ave., Chicago. Eastern Warehouse & Sales: 199 Lafayette St., New York, N. Y.

★ ★

FLEXIBLE BELT LACING

STEELGRIP is a stronger lacing for all power and conveyor belts. Clinches smoothly into belts, compresses the ends, prevents fraying. 2-piece hinged rocker pins prevent excessive wear. In boxes or long lengths.

BELT HOOKS

WIREGRIP belt hooks have the patented blue aligning card that holds hooks firmly in position, prevents them from loosening, prevents hook loss from handling, prevents waste of short ends. Every WIREGRIP Hook to the last one can be used.

Write for catalog.

ARMSTRONG-BRAY & CO., "The Belt Lacing People"
5378 Northwest Highway, Chicago, U.S.A.

Purchasing Agent for the Guiberson Diesel Engine Co. His office, now in Dallas, will be transferred to Garland, Texas, upon the completion of a large new plant there early in the spring. Alfred P. Morel succeeds Mr. Kemendo as Purchasing Agent for Geophysical Service.

G. N. Hackett has been named Purchasing Agent of Thompson Aircraft Products, Inc., Euclid, Ohio, newly organized subsidiary of Thompson Products.

Leo Abrams, for many years Purchasing Agent for the Anchor Cap and Closure Corp., up to the time of its merger with the Hocking Glass Company in 1940, has been appointed Purchasing Agent of the Conmar Mfg. Co., Newark, N. J.

Francis Jones has been appointed Assistant Purchasing Agent of the Leland Gifford Mfg. Co., Worcester, Mass. Mr. Jones was formerly Purchasing Agent for the Graton & Knight Co. in that city, and has more recently been engaged in sales work.

John Murphy, Assistant Purchasing Agent of the Eastern Gas & Fuel Associates, Boston, has retired from active business after forty-four years of service with the company, more than half of which was devoted to purchasing work.

J. H. Phillips has been appointed Purchasing Agent of the Pittsburgh Steel Co., Pittsburgh, Pa.

★ ★ ★

CHEMICAL INDUSTRIES' BUYER'S GUIDEBOOK

The 17th annual revision (1941-1942) of the Chemical Industries' Buyer's Guidebook has been expanded in the latest revision through the addition of a section on all types of equipment, apparatus, containers and packaging and labeling machinery. It also contains a new Technical Section, supplying engineering data for easy reference. The guide provides where-to-buy-it information on Raw Materials, Chemicals, Industrial Chemical Specialties, Equipment and Containers. Technical data such as formula, physical and chemical properties, uses, shipping containers, shipping regulations and tariff rates provides chemists and chemical engineers as well as buyers with pertinent information—a veritable chemical dictionary.

Other sections provide a geographical list of all chemical manufacturers, jobbers and distributors; an alphabetically arranged list of equipment and container companies; a five year comparison of chemical prices; a list of association allied with the chemical industry; and a checklist of over 20,000 brand and trade names identifying the product and the maker.

It is published by Tradepress Publishing Corporation, 522 5th Avenue, New York. 738 pages. Price $1.50

WHEN USING IS CONSERVING!

Until steel in its various forms is more readily obtainable, the most productive application and sensible conservation of available supplies is indicated.

Because of its far greater strength in relation to weight, the *more extensive use of Stainless Steel* can often effect the release of 2 or 3 times the quantity of carbon steel for more urgent needs. In addition, the remarkable resistance of *Stainless* to corrosion, and its superb performance under extremes of temperature and pressure, assure *greatly* increased periods of service, resulting in less frequent replacement.

Pittsburgh's versatile manufacturing facilities make possible an almost unlimited range of sizes and analyses of *Stainless* Seamless Tubing, Bars, and Wire for nearly every manufacturing, fabricating and installation need. Insofar as availability permits, Pittsburgh engineers will gladly suggest *conserving* applications of these forms of *Stainless.*

PITTSBURGH STEEL COMPANY
1671 GRANT BUILDING PITTSBURGH, PA.

When writing Pittsburgh Steel Company please mention Purchasing

5,500 Aerial Torpedoes for Uncle Sam from Steel Conserved by Preformed Wire Rope

★ Preformed wire rope can help you meet emergency production demands because it wears longer than ordinary or non-preformed cable. Lasting longer, it reduces machine shutdowns for replacement. And that steadies production—makes man and machine hours more productive. In addition, preformed wire rope is easier, faster, safer to handle. It saves both time and money.

★ Now there is another reason for using preformed wire rope. Through its ability to last longer, *it conserves steel for other National Defense requirements.* Indeed, the steel conserved by the use of long-wearing preformed wire rope, in 1941 alone, would be enough to fabricate more than 5,500 aerial torpedoes.

★ Preformed wire rope is an essential to American industry—a necessity for the Nation.

PREFORMED WIRE ROPE

Ask Your Own Wire Rope Manufacturer or Supplier

FIGURE FACTORIES

Modern calculating and accounting equipment has developed far beyond the adding machine stage. Are you using such equipment so as to get the maximum value?

By E. L. CADY

THE Production Manager of a small gear shop was about to start a new production lot under way. And his immediate actions were typical of the factors which govern the procurement of adding and calculating machines today.

He picked up a blue print and scanned it carefully. Then he wrote down a few simple facts on a form. Machines to be used, probable production speeds, dates on which the machines would become available, heat treatments, and similar matters, were listed. Then he put the form with the blue print into the "out going" mail basket, and turned back to his job of getting more production out of his machines.

This automatic machine is tabulating a record of purchases from punch cards, accomplishing the job in a fraction of the time required by manual methods, and with unquestionable accuracy.

The form and blue print went to the planning division or Plant Engineering Office. And here some adding and calculating machines came into use. In fact, adding and calculating machines all over the shop, got going.

From the tool room came a quick report on tools available, inspection instruments available, and the dates when available. None of this needed much calculating machine work. But the tool room foreman added data regarding new tools needed, tool room equipment hours needed to make them, tool steels and other materials to be withdrawn from stock, and new tool materials not now in stock; all of which meant considerable use of the small electric desk model calculating machine which is kept available in the engineering office.

Another report came from the sales department. It totalled the probable sales of gears which can be made from the same diameter blanks of the same materials as those needed for this order. The blanks might be carved out on turret lathes from bar stock. The way to keep turret lathes fully employed, is to cut up as much stock at one set-up as is practical for all products which need one diameter and type of material then break the machines down and re set for another size, thus cutting way down on the outage time for set-ups The sales department figures would be totalled on a small hand powered adding machine used by that department's stenographer.

The stock room had a report to make, also. The amount of this stock on hand, the amount covered by orders already listed for production—this information is important as priority ratings might shift stock from one assignment to another—the number of blanks of this size and material already cut off and in stock, and the amounts and dates of the available time of the sawing and other stock room machines to cut off more blanks, would be listed. This last factor is important, for if enough blanks are on hand or enough sawing time is available, then the production management may resort to sawing the needed blanks off from bar stock and machining them in engine lathes or turret chucking lathes, thus keeping the time of bar stock turret lathes free for other demands. To get these reports out quickly, the stock room also has a small manually operated adding machine.

Now the Plant Engineering Office had

Paper's working harder, too

Who? Why? When? Where? How many? How much? Today those questions demand instant, accurate answers . . . and paper has the job of providing them quickly, efficiently and in easily understood form.

For that reason, paper now assumes even greater importance in business and industry and on the men responsible for the proper selection of paper falls an even greater responsibility.

If you are concerned in any way with the selection or purchase of paper for record keeping, accounting, clerical or correspondence purposes, remember that the Byron Weston Company specializes in the manufacture of high grade, cotton fibre content papers designed expressly for these uses. The complete line of Weston ledger, index, bond and machine accounting paper contains a range of grades, weights and colors for every need or application.

Your printer or paper supplier will assist you in selecting the right Weston paper for any purpose.

IF IT'S WORTH KEEPING, KEEP IT ON A

WESTON *paper*

FOR HELPFUL INFORMATION on the selection, procurement and use of high grade papers, ask us to send you *Weston's Papers*, a special publication of news, ideas and information for paper buyers. Write for it today. Address:

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Makers of BYRON WESTON CO. LINEN RECORD (Extra No. 1, 100% Cotton and Linen Clippings), DEFIANCE LEDGER (100% Cotton Fibre Content), WAVERLY LEDGER (85%), CENTENNIAL LEDGER (75%), WINCHESTER LEDGER (50%), BLACKSTONE LEDGER (25%), WESTON'S MACHINE POSTING LEDGER and INDEX (50%), WESTON'S BOND (Extra No. 1), DEFIANCE BOND (100%), HOLMESDALE BOND (75%), WINCHESTER BOND (50%), BLACKSTONE BOND (25%).

a correlating job to do. And for this, it picked up its reports and took them to the bookkeeping department.

The bookkeeper—this firm has not gotten around to calling her a "comptroller"—has a machine which prints as it tabulates.

Several totals can be carried at once. Several carbon copies can be made. Copies can be interleaved among the carbons and taken out again as desired, so no copy need bear any unnecessary information.

Copies from this machine go to every department.

The purchasing department will get, *at the earliest possible moment*, a list of the new tool materials needed, the new raw materials needed, all other materials to be bought for the order, and all materials and tools and supplies to be withdrawn from stock.

After the Purchasing Agent has found out just what delivery dates can be had, the Plant Engineering Office can tell the sales department just what deliveries can be expected on the finished gears, and why the delays will occur. Can a better priorities rating be obtained? Then some refiguring will be done.

Copies go to the tool room, telling what work is scheduled, when the new tool materials will arrive, and when it must be done. Copies go to the stock room, assigning the raw materials in stock, telling what materials are due and how to assign them, and assigning the production time of the sawing equipment.

Of course, every one of these copies means some special stenographic work. But compare this method with the one in use in this company only two years ago.

By the old method, the Production Manager did everything with a blue print, a slide rule and a lead pencil. He figured out his processes, the probable stock needed, and the tools. Now and then he called in the tool room foreman and the Purchasing Agent. He guessed at delivery dates, broke down machines and set them up again in accordance with the loudness with which various customers yelled, sat in his office scratching his head when he should have been getting idle machines on to the production schedule, filled the stock room and the tool room with odd bits which never would be found until "inventory time"—if then—and finally filled out requisitions which called for too much material all of which was needed in too much of a hurry.

The new system lets the P.M. stick to his job of keeping all of the machines going at peak efficiency. For now, all he does is to feed his part of the calculations into a "figure factory", and then go back to work while waiting for his part of the finished calculations.

These "figure factories" are production lines within factories, or within offices, or within and between branches of a company. And for them, the Purchasing Agents must procure the necessary equipment, just as they would buy for any other production task. In the

CUTS WASTE MOTION!

Steps up production!

CASE STUDY IN PRODUCTION CONTROL

Simplified paper control system eliminates over 20 forms . . . increases productive time . . . saves thousands of dollars annually for bearing manufacturer—with the help of the Mimeograph duplicator!

A paper control system — adequate for normal times — just wasn't good enough, when defense-time orders began to crowd the plant of a large Ohio manufacturer of bearings, bushings and washers for the aircraft and automotive industries.

So he changed the system — helped by the Mimeograph duplicator and the advice of our company's duplicating experts —and stepped up production substantially.

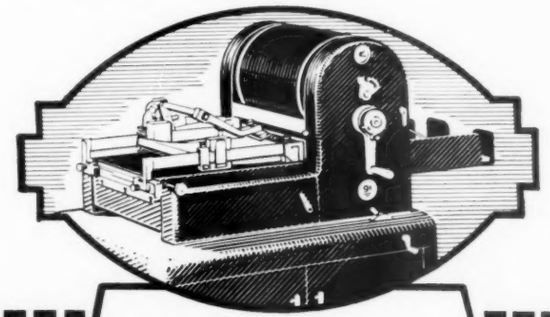
Waste motion was cut by eliminating old-fashioned "route sheets." Previously, employees had to leave machines, go to production centers and tool cribs to get information they needed. Now "travel cards" bring condensations of pertinent facts to the employee at his machine, increase his productive time because the cards are right on the "tote boxes" carrying parts in various stages of manufacture.

Actually, more than a score of different forms were eliminated —and out with them went wasteful, multiple-writing time. Standardizing on a "one-writing" system meant savings in forms alone of thousands of dollars a year, plus the timesaving by the elimination of useless rewriting.

The beauty of it is: Mimeograph equipment installed in this plant paid for itself in less than two months.

This case is just one example of the way Mimeograph duplicators work for and with manufacturers to cut the cost of production control. For an analysis of your paper work problems and moneysaving recommendations, call the Mimeograph distributor in your community—or write A. B. DICK COMPANY, Chicago.

". . . cards right on the 'tote boxes.'"



Mimeograph duplicator

MIMEOGRAPH is the trade-mark of A. B. Dick Company, Chicago, registered in the U. S. Patent Office.

FREE! Results of our work with hundreds of companies mean practical suggestions and usable ideas for your company! Send for your free copy of remarkable new portfolio, ***Manufacturing Profits.*** Clip the coupon today!

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Rush me a free copy of ***Manufacturing Profits.***

NAME..... *TITLE*.....

COMPANY..... *STREET*.....

CITY..... *STATE*.....

When writing A. B. Dick Company please mention Purchasing

example just cited, the key machine of the "figure factory" is called an "adding typewriter." And in selecting this machine, the Purchasing Agent was guided by surveys of his company made by the Sales Engineers of the makers of the machine.

Like any good machine for a jobbing shop, the adding typewriter has part of its time firmly allocated, with the rest available as needed. All day Thursday, the typewriter is devoted to payroll, tax, government questionnaire, and similar "must" activities. With the "must" deductions for social security and all, and the "privilege" deductions for direct payments to savings accounts and the like, each pay check may have as many as ten different calculations to be made and columns to be filled in, which makes the payroll a complicated business and gives the machine plenty to do.

Friday morning hours of the adding typewriter are reserved for billing. This company likes to keep its operating capital active, so it clears up each week's billing during that week.

Monday, Tuesday and Wednesday mornings, the adding typewriter is available first to the bookkeeper for any necessary work, but after that to all departments as needed—although only the bookkeeper ever operates it. Saturday is "emergency day", when the department with the direst need gets the use of the machine.

Flanking the adding typewriter, are two old style manually operated adding machines. These take care of casual figuring in the bookkeeping department.

For the Plant Engineering Office, a small desk model electric motored calculating machine was purchased. On this machine, a problem in multiplication or division can be set up, the starting button pushed, and the machine will click merrily away while the engineer does something else. It delivers far more complete figures than could be had with a slide rule, and with less trouble and danger of error.

The tool room also makes extensive use of this machine, and even sends some of its calculations down to the adding typewriter to be correlated. This is a far cry from the old system of covering the backs of blue prints and odd bits of luncheon wrappings with involved figures, then going to the indexing mechanism of the tool room milling machines and resorting to some mystic twirling of the dividing head for final answers. By the new method the tool maker keeps on making tools while he gets right answers without headaches.

The Plant Engineer's calculator also is used by the bookkeeper when necessary.

The sales department and purchasing department use the two manually operated adding machines in the bookkeeping department, but also feed problems to the "figure factory".

In the stock room is one of the latest model manually operated calculating machines. For the stock room man has to be able to translate pounds of stock of a given size into feet and fractions of an inch and probable cutting time on machines, while keeping his sawing machines going, receiving and delivering stock, planning where to put what, and doing the adding and subtracting necessary for an up-to-the-minute perpetual inventory. The Purchasing Agent therefore selected this stock room calculator for its simplicity of operation; he got a machine which a simply educated mechanic could handle with speed and ease.

In selecting the machines, care was taken not to have any unnecessary need for supplies. Only the machines in the bookkeeping department print their totals and other figures. It is assumed that users of the others will write down their calculations, and will use the plant phone, etc., in discussing figures with each other rather than becoming too machine-like in exchanging formal reports. This at once keeps red tape out of factory operation and supply bills off from purchasing requisitions.

All figure factories—and every modern business has one—are more or less complex counterparts of this simple example.

A paper box and carton factory has a plant and warehouse more than a half mile long and with most buildings several stories high. Calculations for production orders are made on adding machines which are hooked directly to punch-card accounting machines. The stations on the punch-cards indicate raw materials requirements, all sorts of production operations, and good in finished stocks.

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Research and improvements
produced 3 DIMENSIONAL RECORD PAPER
Over three-fourths of a century of exploring for better manufacturing methods has resulted in papers that offer you three distinct advantages . . . a smooth writing surface that withstands erasures or thumbing . . . extra strength to resist the hardest usage . . . permanence that outlives generations. Specify PARSONS RECORD PAPERS (made from cotton fibers) for all your important documents. There's no additional cost for the extras it gives you. Send for samples today.
Sample books of these grades can be obtained from your Printer, Lithographer, Parsons Merchant or direct from the mill.
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INDEX
PAPER COMPANY · HOLYOKE · MASS.

From these cards, the demands upon the procurement division can be kept up to the minute, and factory managers can be told exactly what is ahead so they can plan for working extra hours or for cutting down on hours so as to keep employment steady while avoiding either delayed shipments or excessive inventories of semi-finished goods. Power needs can be foretold from these cards also, and the power plant engineers are enabled to plan their outage time and to make savings. Feeding these main punch-card machines with predigested data are other calculating machines throughout the plant.

A manufacturer of electric motors uses payroll machines with quick set cartridge units which can be added to the machines or removed or shifted in positions at will. The functions of these units are to take off and tabulate special data while the payrolls for various departments are being made up. Thus if bonus rates are going too high, data will be supplied the rate setters and the methods engineers. If skilled labor hours of work are too high, the time study men and the methods engineers are informed. The cartridge units make it easy to take off these data with no special reviewing of payroll time slips and with the least extra labor and time for the calculating machine operators.

A maker of grinding wheels uses the types of calculating machines which can be completely changed in functions in a matter of minutes. Thus, after the payroll work is done, the key captions on the key banks are replaced with another set related to production control and the calculating stations are quickly reset to new printing positions to fit the production forms. The machine then makes and correlates calculations for departments which must produce hundreds of special sizes of wheels while keeping the standard lines going steadily.

A maker of postage machines strives to maintain the best industrial relations in the USA. To do this, figures on the exact performances of every employee are made up in tabular form whenever any production lot passes through any department. The figures show amounts produced, skills and aptitudes displayed, scrap and spoilage, and every other factor. When lay-off time, or promotion time, or special bonus time arrives, the figures themselves must tell the full story of which man is to receive what consideration. Personal factors, seniority and the like are reviewed also. But cold figures tell impartial stories, the foremen are not permitted to have "pets". The system requires that time keepers and inspectors shall supply the personnel department with clear totals which are made on electrically powered printing adding machines. The personnel department keeps all original and gross totals, cross-tabulating them on punch-cards. And although often surrounded by strikes, this plant never has had labor trouble.

In instance after instance, Purchasing Agents are finding the adding and calculating machines which will serve and promote the "figure factories" within their own companies. The Purchasing Agents can do this, for of all men they themselves are the most "figure minded" and are best able to understand the "whys and hows" of mechanical calculating

* * *

AIR EXPRESS DEMONSTRATES NATIONWIDE EFFICIENCY

Food from forty-eight states will be air expressed to New York early this month as a demonstration of the vital part the nation's nineteen commercial airlines could play in case of an emergency. Air Express will expedite representative products from the various states such as potatoes from Idaho, sugar cane from Louisiana, apples from Washington and dairy products from Wisconsin. Under emergency conditions, such as isolation of a community due to flood, famine or enemy attack, commercial airlines could deliver food as far as 2900 miles overnight.

Air cargoes of food will be loaded aboard airplanes in all states on last-minute notice to simulate a sudden emergency condition.

The typewriter is the voice of management. Through it must pour instructions, orders, specifications, correspondence.

Carbon paper that curls slows up your typists . . . creates a bottleneck. That's why . . .

It pays to give your typists DAWN
OLD TOWN'S AMAZING NEW CURLPROOF CARBON

DAWN gets the job into the machine quicker . . . turns it out neater. Saves time. Saves temper. Saves mistakes. REASON: DAWN STAYS FLAT, never curls, is easy and clean to handle. Try this *speedy* carbon. For test samples write OLD TOWN RIBBON & CARBON CO., Inc., foremost makers of ribbons and carbons for every use. Address Dept. P-1.

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OLD TOWN Ribbons & Carbons
"MAKE A GOOD IMPRESSION"

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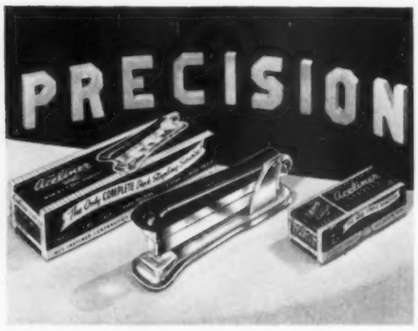
Every sheet of OLD TOWN carbon trade-marked and GRADE-marked. Know what you buy . . . get what you pay for.

"WORLD'S FINEST STAPLER"



THE NEW Aceliner

STAPLES PINS TACKS CLIPS

THE only stapler that staples, pins, tacks and hand fastens . . really four machines in one. Streamlined design balanced to fit the hand perfectly. Four beautiful colors—Mahogany Red, Emerald Green, Walnut Brown and Black, for any office color scheme.

Made with watch-like precision of highest grade steel. Triple chromium plated. So durably constructed it is GUARANTEED FOR LIFE! The Aceliner never jams or clogs . . loads in 30 seconds. Each $6.00

ACE STAPLES

Assure the smooth, dependable performance of The Aceliner or any standard Stapler by always specifying ACE Staples. They're precision made from premium quality wire; uniform in size, strength and temper. Guaranteed not to jam or clog.

ACE STAPLE REMOVER

Removes clinched staples neatly, quickly. Prevents damage to paper, saves fingernails. Thousands used by U.S. Government. Each 60c

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ACE STAPLING MACHINES

The WORLD'S FINEST

FOR EVERY PURSE AND PURPOSE

RECEIVING SALESMEN AT TIMKEN COMPANY

As a result of wartime business conditions, the number of callers at the Canton, Ohio, office of The Timken Roller Bearing Company increased to approximately 2,000 per month, far beyond the capacity of former facilities for receiving and interviewing visitors. Further complications resulted from government regulations regarding admission to factories engaged in defense work, and the necessity of determining whether callers are American citizens.

To meet this new need, a new reception room has just been completed, providing added facilities for expediting reception and interviewing.

The reception room register is kept on a standard register with continuous forms covering the following information:

(a) Date
(b) Name of visitor
(c) Name and address of firm the visitor represents
(d) Names of additional visitors in party
(e) Name of person to be called on, and the subject of call
(f) Whether or not the visitor is an American citizen
(g) Time registered
(h) Time interviewed

With this system, the visitor generally gets to his interview within three or four minutes. To further expedite matters, two private interviewing rooms have been installed adjacent to the reception lobby, where business may be transacted. All callers are taken to and from the various offices by escorts.

The new lobby is forty feet square, finished in attractive pin oak, with concealed lighting and heating. Three permanent built-in display cases exhibit the company's principal products—alloy steel, tapered roller bearings, and removable rock bits.

* * *

J. R. Gibson has been appointed Purchasing Agent of the Peerless Pacific Co., Portland, Oregon, succeeding Clarence Slade, who has been transferred to the sales department of the company.

William R. Orthwein has been appointed Supply Commissioner for the City of St. Louis, succeeding Victor Roach.

THIN PAPERS are Essential to MODERN BUSINESS

to reduce Office and Factory expenses.

Specify one of

ESLEECK THIN PAPERS

Fidelity Onion Skin
Emco Onion Skin
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and we shall endeavor to give reasonable service, although the enormous demand, including large Government orders, also the increasing scarcity of essential raw materials make it very difficult to do so during the present emergency.

ESLEECK
Manufacturing Company
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A NEW QUALITY STANDARD IN CARBON PAPERS . . . .

OLD DUTCH proudly welcomes a distinguished newcomer to The Line of Lowest Ultimate Cost. The development of "Gold Imprint" stems from our many years of experience in the manufacture of top quality products. Here are carbon papers that will give you a sharper, blacker, more permanent record for a longer period of time. Significant as a trademark, "Gold Imprint" is truly a new quality standard in carbon papers!

"GOLD IMPRINT," like the other fine products of the OLD DUTCH line is available for all types of machines and all impression requirements.

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Our trained field representatives will be pleased to show you samples of "Gold Imprint;" please call them for machine requirement consultations. Or, write directly to the office nearest you for samples.

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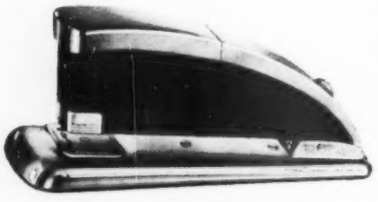
Swing to ★ STAR

for better Stapling

Equip office desks with STAR staplers for easier, faster paper fastening.



STAR MODEL S101

List Price $5.50

Put one of these handsome STAR machines on a desk and see how everyone goes for it. It will be the most popular office appliance you have installed in many a day! Office workers like its attractive design and especially they like its almost effortless action when stapling. Even a thick file of papers can be stapled easily.

Star staplers are economical too. They use standard size staples, not special hard-to-get sizes. Star staplers are built to last. All working parts are fully hardened, and designed to stand the toughest service. Moreover, they are made and guaranteed by an organization with years of experience in this specialized business.

PURCHASING AGENTS, here's our offer; Write us a letter telling us where to send it, and we will send you one of the latest Model Star machines to try out. There's no obligation and the transaction will not cost you a cent.

Use this Star stapler on your own desk. See how smoothly it operates and what a clean tight clinch it makes. Then give it to the busiest operator in your organization. See how it stands up under the hardest kind of service.

Many other models to choose from.

Circulars and prices on request

★ STAR PAPER FASTENER CO.

NORWALK, CONN.

Makers of a full line of staplers and tackers.

CONSERVING PAPER CARTONS

FOR DEFENSE
★ ★ ★ ★ ★ ★ ★
In order to conserve materials vitally needed for defense, this shipment comes to you in a used container. The packing has been handled with our customary care.
THE DUMORE COMPANY
RACINE, WIS.

Threatened shortages of corrugated and fiber board for shipping cartons are being met in many instances by the re-use of such containers. By making the carton do double service or more in this way, a real conservation of material is effected, and a troublesome supply problem is solved. While the solution may not be ideal from the standpoint of distinctive packaging, it is practical, economical and patriotic.

The Dumore Company of Racine, Wisconsin, one of the firms which have turned to this practice, has hit upon an excellent method of explaining the underlying principle to its customers, reassuring them as to the adequacy of the packaging protection, and maintaining the company's prestige by capitalizing what might otherwise be misinterpreted as a deficiency in service. Purchasing Agent J. M. Hamilton has secured gummed labels, strikingly printed in the national colors, which are attached to every shipment made in this way. The label carries the message:

For Defense

"In order to conserve materials vitally needed for defense, this shipment comes to you in a used container. The packing has been handled with our customary care."

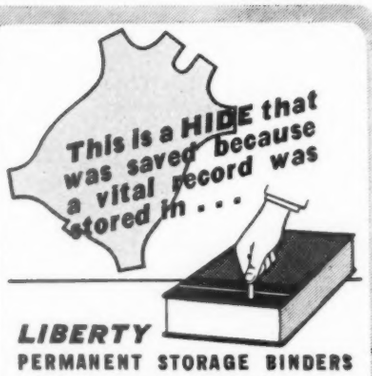
* * *

INDUSTRIAL FINISHING

The industrial finishing industry, like many others, has been thrown off its normal course by the demands of defense production and the operation of priorities on raw materials. However, makers of goods without high priorities have not been prevented from obtaining finishes to meet their needs from manufacturers in position to meet rapidly changing conditions, says G. Klinkenstein, Vice President and Technical Director of the Maas & Waldstein Co., Newark, N. J.

These changes involve both the kinds of finishes and the raw materials that are available to producers of non-essentials.

Some of the ingredients commonly used in lacquers and enamels, such as nitrocellulose, certain solvents, many types of pigments, especially whites, synthetic resins of the phenol-formaldehyde, alkyd, and urea-formaldehyde groups, and aluminum powder, can be supplied only in limited quantities, or not



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at all, for use by the non-essential industries.

At the same time, these industries have, in many cases, been forced to make one or more drastic changes in the composition of their products. Thus, certain manufacturers have had to switch from metal to a plastic, and then again to wood, paper mache, or other material.

Both kinds of changes create new problems for the industrial finishing industry to solve with a minimum loss of time.

The result has been the development of a series of finishes based on castor oil, soy oil, linseed oil, various organic acids, and other substances that are not likely to be limited in supply by either our defense needs or by military operations, as is the case with tung oil and phthalic anhydride. In the hands of formulators with adequate skill, very satisfactory substitute finishes are thus being produced, and, in many cases, permanent additions are being made to our list of useful finishes.

Since we are planning to double our defense output in 1942 as compared to 1941, the difficulties of manufacturers without high priorities are bound to increase, but they need have no special concern about the finishing situation, unless events take a totally unexpected turn. Solving special problems has always been the chief business of certain manufacturers of finishes, and this kind of experience is of particular value at this time.

The defense and essential industries are, of course, using finishes of all kinds in large quantities, and not much trouble has been experienced in supplying them.

At this time last year, defense work was being hampered by the fact that the government specifications for finishes were largely obsolete. This situation has been remedied. In fact, the finishing industry is now urging the government to reduce its consumption of the most modern types of finishes wherever possible, so as to permit a large amount to go to non-defense industries.

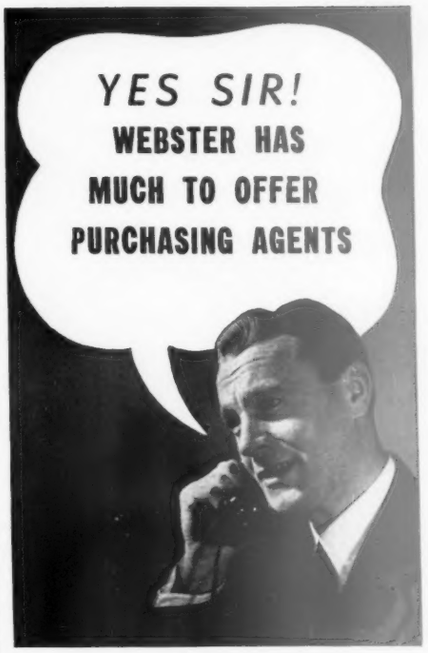
For the use of the defense industries the heaviest demand is for air-drying and baking alkyd synthetic enamels and air-drying lacquers. Wrinkle enamels are being used for special jobs, such as finishing radio cabinets, telephone panels, and small instruments.

The development of high-speed finishes and the rapid radiant heat baking process has greatly helped to speed up the production of defense products. The finishing room need never be a bottle-neck in any important industry.

* * *

SYNTHETIC RUBBER CAPACITY

Although 1942 production of synthetic rubber will represent a five-fold expansion over 1941, increasing from 11,700 tons to 63,000 tons, this will afford little actual relief in the general rubber situation if supplies of natural rubber are cut off, for it is only a little more than one month's supply. The nation's con-



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sumption of rubber is currently at a rate of about 55,000 tons per month, the greater part of this tonnage going directly into essential war production.

There are serious problems involved in expansion of this industry. Plants are complicated, and the equipment requires the use of special hard steels and alloys. Perhaps the greatest bottleneck of all is the lack of competent and experienced technical personnel to man the plants.

LARGE VEGETABLE PACK

According to an announcement by Secretary of Agriculture Claude R. Wickard, the greatest supply of canned vegetables in the history of the country is to be produced in 1942, sufficient to meet military requirements, increased domestic consumption, school lunch and lend lease quotas, and to provide for a normal carryover into the next season.

The program calls for 40 million cases of tomatoes, about 25% more than the 1941 pack; 38 million cases of peas, about 33% more than in 1941; 12½ million cases of snap beans, approximately equal to the 1941 pack; and 24 million cases of corn, 8% less than in the record breaking pack of the current season. For the four products combined, this represents an increase of about 15%.

Secretary Wickard said, in connection with this announcement: "As a nation at war in the world struggle against aggression, we must keep on increasing our total food production from the record levels we have already reached this year. Every effort should be made in the case of canned tomatoes and canned peas even to exceed the goals as a safeguard against any contingency. These two canned vegetables are especially and urgently needed in building the health and strength of our civil and military forces as well as meeting requirements of our frineds abroad fighting for democracy's cause."

The Department of Agriculture has consistently reassured the nation that there will be no shortage of food, and the present program is undertaken in conformity with that goal.

Cold storage facilities are adequate, in total, for the space requirements for butter, cheese, lard, meats, eggs, fruit and vegetables, but there may be some problems of location to meet the particular needs, especially in central points. In that event, there are two possibilities: warehouse priorities, and requisitioning of private space in remote localities. It is estimated that there are more than 800 million cubic feet of refrigerated space available. Meat packing plants are 95.2% occupied; public warehouse 53.1%; and private plants 27.3%.

PURCHASING COURSE AT BIRMINGHAM

A course in Industrial Purchasing, sponsored by the University of Alabama under the Defense Training Program, opened at Birmingham last month. George Wilson, Jefferson County Purchasing Agent, is the instructor.

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Among the ASSOCIATIONS

N.A.P.A. EXECUTIVE COMMITTEE MEETS IN ST. LOUIS

The mid-year meeting of the Executive Committee of the National Association of Purchasing Agents is called for January 10 and 11, at the Coronado Hotel, St. Louis. In connection with this meeting there will be a conference of the Editor's Group in St. Louis on January 9th, and a meeting of the St. Louis Association is scheduled for Friday evening, January 9th, at which the Executive Committeemen and Editors will be guests of the Association.

In addition to reports and discussion on various phases of Association activity represented by the standing committees, there will be special reports from the Committee on Education and the Committee on the Boffey Memorial Award Students' Educational Contest Plans and budget for the 1942 convention in New York will be considered. Also coming up for final approval is the standard proposal and standard purchasing specifications for heavy equipment. A committee headed by Past President Thomas D. Jolly has represented N.A.P.A. in this project, and a final recommendation has been made and approved by this committee and that of the equipment manufacturers.

CAROLINAS-VIRGINIA BUYERS HOLD ANNUAL MEETING

The annual meeting of the Carolinas-Virginia Association of Purchasing Agents was held at the Hotel Charlotte, Charlotte, N. C., December 5th and 6th. R. V. Spangler of the Charlotte Mill-Power Supply Co. was elected president for the coming year, succeeding George C. Eichhorn of the Vick Chemical Co., Greensboro, N. C., who becomes National Director. R. S. Fitch of Fredericksburg, Va., was chosen Vice President, and H. D. Waters of the Charlotte Mill Supply Co. becomes Secretary-Treasurer.

In addition to the honor of the presidency, Mr. Spangler was given the Thomas Award, symbolic of meritorious service to the profession of purchasing during the past year. He has been secretary of the Carolinas-Virginia group for six years. The award, a handsomely engraved plaque, is named in honor of W. G. Thomas, Chief Purchasing Agent of the Duke Power Co., Charlotte, one of the founders and outstanding leaders in the association.

Following the Saturday morning business session, at which R. C. Haberkern of the R. J. Reynolds Tobacco Co., Winston-Salem, Vice-President of the N.A.P.A. discussed national association affairs, the members adjourned to the Charlotte Country Club for golf. The 1942 annual meeting will be held at Pinehurst.

TULSA ASSOCIATION ELECTS McLAREN

At the annual meeting of the Tulsa Association of Purchasing Agents, December 9th, C. G. McLaren of the Shell Oil Company was elected President for 1942. Other officers for the coming year includes:

1st Vice President, J. H. Wolfe of British-American Oil Producing Co.

2nd Vice President, R. R. Burris of Sun Oil Co.

Secretary-Treasurer, R. M. McMahan of Bovaird Supply Co.

National Director, J. S. Hawley of Stanolind Oil & Gas Co.

Executive Secretary, H. M. Cosgrove.

Assistant Secretary, E. M. Welch.

The annual President's-Ladies' Night dinner dance was held at the Tulsa Club on December 6th.

HAMILTON ASSOCIATION ELECTS WALKER

Officers for 1942 were elected at the December meeting of the Hamilton Purchasing Agents Association. The slate for the coming year includes:

President, J. Frank Walker of Frost Steel & Wire Co., Ltd.

Vice Presidents, H. B. Coleman of Canada Machinery Corp., Galt, and J. H. Burkholder of Dominion Foundries & Steel, Ltd.

National Director and Member of Canadian Council, G. A. Ireland of National Paper Goods, Ltd.

Recording Secretary, J. F. Stephenson of Kraft Containers, Ltd.

Corresponding Secretary, E. M. Fletcher of Robinson Industries, Ltd.

Treasurer, R. O. Geddie of The Hamilton Facing Mill Co., Ltd.

CITY OF TORONTO STUDIES CENTRALIZED PURCHASING

The Board of Control for the City of Toronto, Canada, is seriously considering the establishment of a centralized purchasing office to handle the procurement of municipal supplies and materials for various departments. At a recent special meeting of the board, representatives of the Toronto Purchasing Agents Association were invited to confer with the civic officials as to the advantages of such a plan and best methods for organization.

NEW OFFICERS FOR CENTRAL ONTARIO BRANCH

The Central Ontario Branch, Purchasing Agents Association of Hamilton District, has elected the following officers for 1942:

Chairman, H. L. Anderson of Dominion Electrohome Industries, Ltd.

National Director, F. E. Mason of Preston Noelting, Ltd.

Secretary-Treasurer, A. Brubacher of Breithaupt Leather Co., Ltd.

Executive Committee, R. J. Nesbitt of Beaver Furniture Co., Ltd., J. H. Lauman of Kaufman Rubber Co., Ltd., H. E. Lachman of Dominion Life Assurance Co., A. G. Henderson of Scroggins Shoe Co., Ltd., M. J. Murphy of Eastern Steel Products, Ltd., and N. E. Webb of Guelph Paper Box Co.

NIAGARA PENINSULA BUYERS ELECT NEW OFFICERS

New officers have been elected by the Niagara Peninsula Branch, Hamilton Purchasing Agents Association, as follows:

Chairman, John A. Joyce of Alliance Paper Mills, Ltd.

Vice Chairman, Keyth C. Reece of Canadian Carborundum Co., Ltd.

National Director, Horace Cluderay of Hayes Steel Products, Ltd.

Secretary-Treasurer, George S. Green of Provincial Paper, Ltd.

Executive Committee, S. J. Walters of Canada Foundries & Forgings, Ltd., H. H. Mansfield of Jos. Stokes Rubber Co., Ltd., W. W. Jefferson of Commonwealth Electric Corp., Ltd., C. H. Strasser of Norton Co., and George D. Qua of Niagara Plumbing Supply Co., Ltd.

BIRMINGHAM MEETINGS

December programs of the Birmingham Purchasing Agents Association included a talk on "The Industrial Water System" by City Comptroller C. E. Armstrong, an address by J. C. deHoll, Director of the Housing Authority, and a priorities discussion led by Martin J. Lide, in charge of the Birmingham field office of the Priorities Division, OPM. The annual Christmas party was held at the Mountain Brook Country Club on December 23rd.

OREGON ASSOCIATION

"Purchase Scheduling" was the topic of the luncheon meeting of the Oregon Purchasing Agents Association, held at the Mallory Hotel on December 12th. Eugene Caldwell, General Manager of the Willamette Hyster Co., was the guest

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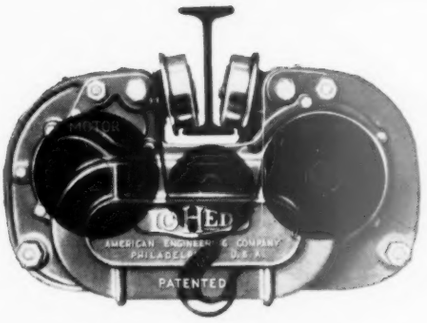

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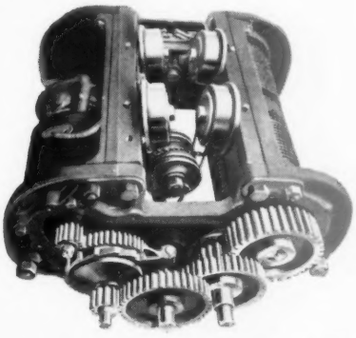

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speaker. The annual Christmas party was held on the 19th, featuring a donation of toys to the "Toy and Joy Makers," annual project of the Portland Fire Department.

* * *

CHICAGO BUYERS DISCUSS SUBSTITUTE MATERIALS

"Science and Substitutes" was the topic of an address at the December 11th meeting of the Chicago Association of Purchasing Agents, by Dr. Harrison E. Howe, Editor of *Industrial and Engineering Chemistry*. Closely in touch with present day problems through his service as chairman of the Advisory Committee on Priorities, Chemical Section of O.P.M., Dr. Howe presented first hand information of interest in respect to substitutions that are being made in this country and abroad, and predicted technical changes in industry through recent developments in chemistry. Commodity chairman T. J. Anderson led a discussion on commodity markets.

* * *

SPRINGFIELD ASSOCIATION

Professor Stevens of Antioch College was the guest speaker at the December 10th dinner meeting of the Springfield (Ohio) Purchasing Agents Association. His interesting and timely topic was, "The Economics of War." The meeting was held at the Shawnee Hotel, with President Moorehead presiding.

* * *

NEW ORLEANS MEETING

A. B. Paterson, President of the New Orleans Public Service, Inc., addressed the December 8th meeting of the New Orleans Purchasing Agents Association, at the St. Charles Hotel. His topic was, "The Value of Purchasing Departments to the National Defense Program." Mr. Paterson is Chairman of the Advisory Committee for Louisiana, Division of Contract Distribution, O.P.M. Representatives of the U. S. Army and Navy procurement divisions were also present at the meeting.

* * *

HERCULES POWDER FILM SHOWN AT MILWAUKEE

A kodachrome film showing the manufacture of various chemicals produced by the Hercules Powder Company was displayed at the December 9th meeting of the Milwaukee Purchasing Agents Association, at the Elks Club, by George Underwood of the company's Naval Stores Department. The meeting was preceded as usual by an afternoon commodity forum.

* * *

DAYTON MEETING

Tris Speaker, retired major league baseball star, and other headliners from the field of sport, featured the program of the December 11th dinner meeting of the Dayton Purchasing Agents Association, held at the Engineers Club.

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In this backyard shack George Webber of Cleveland is cracking a major defense bottleneck. He has found a way to produce in quantity those vital precision instruments known as block gauges. Few men have ever known how to finish these small blocks of steel to the microscopic accuracy required for modern mass production. Now Webber's secret machine turns out 37 sets, of 81 blocks each, every week with the aid of Aloxite Brand Aluminum Oxide Grinding Wheels.

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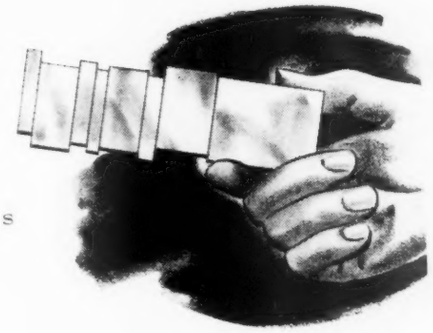

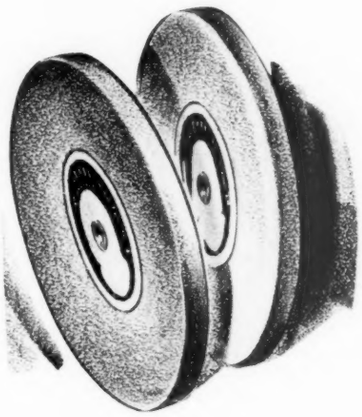

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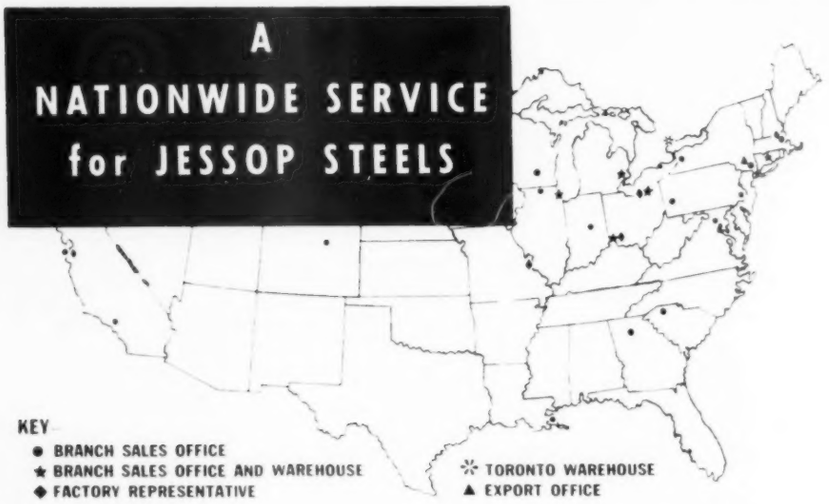

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HOW WESTINGHOUSE CONSERVES MATERIALS

(Excerpt from an address by David R. Kellogg, Assistant to the Manager of the Engineering Standards Department, Westinghouse Electric & Mfg. Co., before the American Society of Mechanical Engineers, New York, December, 1941.)

While our East Pittsburgh, Pa., Works are very largely devoted to defense orders, this is not true of all of our outlying plants and it may be of interest to glance hastily at what some of our other plants are doing to relieve the situation caused by shortages of essential materials. Obviously, in this short period of time allowed, it will not be possible to do more than touch one or two outstanding cases at each of several plants.

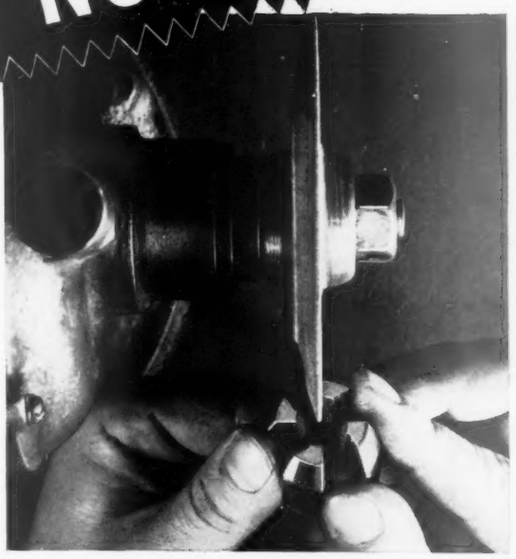
At our East Springfield, Mass., plant, where we make refrigerators and motored domestic appliances, one of the difficulties has been met by changing the brass evaporator for our refrigerators over to vitreous enameled steel. This was the way we made our evaporators when we started in the business and we had considerable difficulty in the shop due to cracking of the enamel. This was because we had not then learned the necessity for extra strong reinforcement and somewhat heavier sheets. We do not anticipate a large amount of trouble from this cause.

At this plant, before these shortages occurred, as a matter of good engineering, some of our parts were redesigned to make use of copper brazing. Instead of the fan cooled radiator, which was quite satisfactory in its performance in the earlier model, we went a couple of years ago to a radiator which consisted simply of a long steel tube copper brazed to a pan which fitted in the back of the refrigerator and got its cooling by convection. In addition to this, certain other parts such as the muffler and the strainer which had previously been made from brass with silver soldered connections has been converted to steel stampings copper brazed together.

We are very thankful now that this was done because, not only does it save vital material, but perhaps more important still, it saves many man hours and man hours are as much a scarcity as material. Our high grade fans were designed a few years ago on the basis of a zinc base die casting for the base as well as for the frame. This was a very carefully planned development with all precautions taken for spectroscopic analysis of the die castings as made. This has been abandoned to the extent that the bases which constitute by far the greater mass of material in the fan aside, of course, from the actual motor itself, are now made from cast iron with appropriate treatment and organic finishes.

At our Mansfield, Ohio, plant, where ranges, cooking devices and the refrigerator cabinets are made, we have been doing some substitution work of rather general interest. Obviously, we have

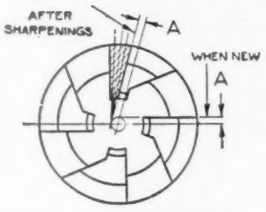
WASTE NOT... WANT NOT



"*Acorn*" Dies will cut perfect threads until repeated sharpenings have ground away more than half of the lands. Now that universal demand makes it hard to get all the dies you need, be sure you get full value from your present stock—by using them until further grinding is not practical. Here's the way to sharpen them so they will last longest and cut best.

To grind the cutting face hold the die as in the illustration and grind the cutting face on a saucer wheel. Take light cuts so as not to burn the threads. Maintain the original angle of the cutting face with relation to "center" (see diagram). See that the same amount of metal is removed from each land.

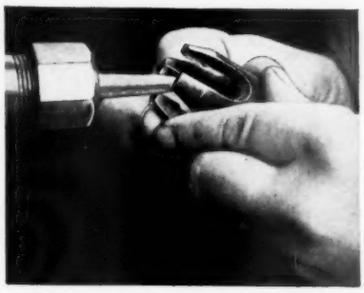
Grinding face on saucer wheel



When grinding the face, maintain original cutting angle this way

Grind the chamfer at the die's throat with a pencil wheel. (See below.) Put a slight relief on the chamfer; that is, remove more metal toward the heel than at the face. Use a solid rest for your hands to hold the die steady.

Special holders can be obtained for the smaller size dies which are difficult to handle.



Grinding chamfer with pencil wheel

If properly ground, the die will still cut perfect threads, even though the lands are quite thin.

Actually "*Acorn*" Dies are very easy to sharpen and a little practice will enable anyone to do a good job and double or treble their normal life.

This is one of a series of advertisements published by Greenfield Tap and Die Corporation to help users get greater production from their small tools in these critical times, through making useful facts more widely known

GREENFIELD TAP AND DIE CORPORATION • GREENFIELD, MASS.

DETROIT PLANT: 2102 West Fort St.
WAREHOUSES in New York, Chicago and Los Angeles
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Fine Precision Wires
Available in sizes down to .0009" diameter.
KANTHAL—For high resistivity and high temperature alloys.
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CONSULT OUR ENGINEERS
"Wire Products Since 1880"
The C.O. JELLIFF MFG. CORP.
22 PEQUOT AVENUE • SOUTHPORT, CONN.

had to decrease the number of cabinets because the amount of steel is limited, but those which have been made are being equipped with hardware of either cast brass instead of the aluminum die casting or in the case of those parts which have no function other than to occupy space and give a pleasing appearance, as for instance, escutcheon plates and hinge caps, we are going to the lead antimony alloys. Thermo plastics are being used in some places instead of anodized aluminum and while these are not too easy to get, the difficulty is not as serious as in the case of the phenolics.

The heater tubes for our Corox heating units have been made from a special stainless steel containing silicon and when this became a critical material, studies were undertaken to provide a different material which would not come under this classification. After a great deal of searching, it was found that one of the high chrome steels could be used, but this involved a great deal of development work at the factory to learn just the proper schedule for swaging. These difficulties have now been overcome and we feel that this element will give quite satisfactory service. Possible shortage of this material may force the adoption of a plain steel tube, cast in iron, or even, if worst comes to worst, an open wire ceramic heater.

On one of our thermostats which operated at a relatively high temperature, it was necessary to make one of the current carrying parts from something which would not oxidize at this high temperature and would have a reasonable conductivity. Stainless steel has been used for this with perfect success but as the supplies of this material went lower and lower, it finally became impossible to obtain even the small amount needed for this piece. The engineers at Mansfield had already planned on using silver for this piece and it is now being used with success and, strange as it may seem, with not an unduly high increase in cost.

Our new fully automatic washing machine, the Laundromat, had been very carefully designed around the best materials available from the standpoint of corrosion resistance and overall performance. This naturally meant a great many aluminum base die castings as well as some zinc base die castings which running under oil in an enclosed space, could be expected to give a long life with freedom from corrosion. All these have been given up by redesign and, while the cost of manufacture is going to be rather seriously affected, I can honestly recommend to my friends the purchase of one of these machines secure in the knowledge that while their manufacture has been rather a painful thing, their use will still be as good and pleasant an experience as if they had been made with the originally designed material.

Ice cube trays, which were anodized rubber, with a special coating to prevent adhesion, are now rubber, with wire inserted handles and stiffeners to permit putting a tray full of water into the freezing space without spilling. The

SET SCREWS ★ *in all sizes*

• Case hardened by most modern methods, Cleveland *Set Screws* meet every requirement for standard specifications. Cup and Oval Points stocked. Cone, Flat, and Dog Points made to order.

THE CLEVELAND CAP SCREW CO., 2917 EAST 79th STREET, CLEVELAND, OHIO

BY THE BOX, OR BY THE MILLION . . . BUY

CLEVELAND CAP SCREWS

SET SCREWS • BOLTS AND NUTS

Address the Factory or our Nearest Warehouse: Chicago, 726 W. Washington Blvd. • Philadelphia, 12th & Olive Streets
New York, 47 Murray Street • Los Angeles, 1015 E. 16th Street

When writing The Cleveland Cap Screw Co. please mention Purchasing

OVER 60

DIFFERENT, SPECIALLY DESIGNED, HIGH QUALITY

OAKITE MATERIALS

to help you in

PRODUCTION, MAINTENANCE AND SANITATION CLEANING

Use This Dependable Supply Source To Meet All Your Cleaning Requirements

For production of defense items or other products or for plant maintenance and sanitation work, over 60 different specialized Oakite cleaning materials are available to meet your specific requirements of safety, speed, thoroughness and economy.

Beyond securing these so essential advantages by specifying and using Oakite cleaning materials, you can depend on (1) prompt delivery from nearby warehouse stocks, and (2) the competent personal service of our Nation-Wide Field Staff. Backed by a binding GUARANTEE, Oakite materials MUST save you money or provide other worthwhile benefits, or they cost you nothing! Tell us your problems . . . no obligation, of course.

OAKITE PRODUCTS, INC.
54 Thames Street, NEW YORK, N. Y.
Representatives in All Principal Cities of the United States and Canada

OAKITE
Certified CLEANING
MATERIALS...METHODS...SERVICE

Victory begins at home!

THE soldier travels not only on his stomach, but also on his trust in those at home who "hold his coat"! To be the best possible "coat holders," we here at SEYMOUR have but one aim these days . . . to do all we can to see that no soldier risks his life for lack of equipment. So, if we get a little behind with your shipments, be assured that the spirit is willing—though the flesh may sometimes be weak!

SEYMOUR

NICKEL SILVER
PHOSPHOR BRONZE
NICKEL ANODES

THE SEYMOUR MANUFACTURING COMPANY
Seymour, Conn.

economizer well on the range is now vitreous enameled steel, instead of aluminum.

At our Lighting Division in Cleveland, Ohio, it has been necessary to abandon the use of the Alzac treated aluminum reflectors for non-defense work. This process is still being employed on defense jobs as it produces results which cannot be obtained in any other way. Certain of the commercial lines have been modified by dropping units from them and others have been changed over to spun steel with a vitreous enamel. Silvered glass reflectors will be used in some places and these, while they have the disadvantage of high cost and fragility, do give very good reflecting properties. Certain of the pole line hardware employed by this division has been changed over from galvanized finish to rust inhibiting primer and paint and we feel that while this is not as satisfactory as the galvanized job, it is at least an honest well known finish which will fail in a gradual manner and will advertise the beginning of failure so that repainting may be done before corrosion becomes serious.

At our Lamp Works in Bloomfield, N. J., experiments are being carried out to utilize a drawn steel shell for the screw base of our lamps. This shell to be plated with brass. This is already in production on certain lines and will probably be completely adopted as soon as we have ironed out a few more of the wrinkles. The nickel support wires will be replaced by nickel plated steel in some cases and in others where the mechanical shock is not so severe, copper will probably be used.

At our Bryant Electric plant in Bridgeport, Conn., we have had to abandon the molding our urea resin dishes because they have no excuse for existence in these times of scarcity. We are still using some of the thermo plastics on non-defense work as well as thermo setting resins for more critical applications. There is a little heater incorporated in our Sentinel breakers and this heater has always been anchored by two little pieces of nickel wire not more than 3/16 of an inch long and about the size of the lead in a pencil. This is not a very large tonnage of nickel but the scarcity has hit us there and we have redesigned to employ spot welding. This will probably give us a somewhat better job than we had before and it is hoped that the cost will be a little less.

At our Meter Works in Newark, N. J., the outstanding economy from the standpoint of quantity of critical material is in connection with our sockets for the outdoor watthour meter. These were originally aluminum die castings and were all that the heart of man could desire both from the standpoint of performance and of manufacturing ease. The very large quantities of these made it imperative that we get away from them as soon as possible and we have now gone to a drawn steel shell zinc plated, bonderized by our improved method, and then given an organic finish. This, we feel, will give reasonably satisfactory service although we are certain

LUBRIPLATE lubricants are manufactured in various fluid and non-fluid densities to meet every condition and are packed in containers from one to five hundred pounds.

THE LUBRICANT FOR THE PURCHASING AGENT OF TODAY

The modern purchasing agent is more interested in the per-unit-of-use costs and ultimate savings, than he is in purchase price of the items he purchases. That is why so many purchasing agents are buying LUBRIPLATE lubricants.

LUBRIPLATE is economical—in fact when all items incidental to lubrication are taken in account it will be found the lowest price lubricant on the market.

In these days of defense production when replacement parts are hard to get and a machine shut-down is a national tragedy, proper lubrication assumes a new importance. Watch these pages for subsequent advertisements showing why LUBRIPLATE costs less to use. Send for the latest LUBRIPLATE literature and name of nearest dealer.

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FISKE BROTHERS REFINING COMPANY
Since 1870
Newark, N. J. Toledo, Ohio
DEALERS FROM COAST TO COAST

LUBRIPLATE

THE MODERN LUBRICANT *that Arrests Progressive wear*

"Its the Film"

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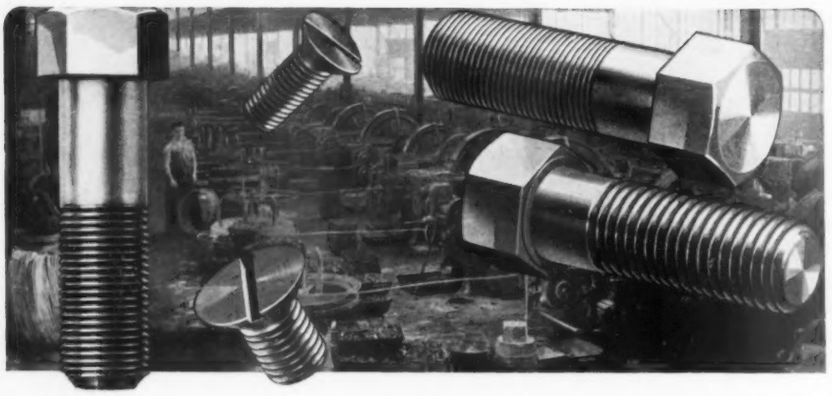
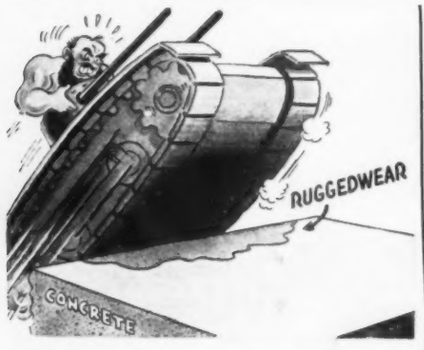


Give your assembly line the gun with speedy TRIPLEX Cap Screws

Top speed production calls for fast-working threaded fasteners. TRIPLEX Quality Cap Screws help keep your work running smoothly — save delays and wasteful throw-outs. Here's a cap screw of fine steel, strong, uniform, accurately threaded. Complete line — full finished and 1035's. It pays you to put your supply problems up to TRIPLEX. Write for samples and prices.

The Triplex Screw Co., 5317 Grant Ave., Cleveland, Ohio.

TRIPLEX CAP AND SET SCREWS • BOLTS • NUTS AND RIVETS
MILLIONS IN USE • EVERYWHERE



All-Out Production Demands SMOOTH, TOUGH FLOORS

If you want smooth, efficient concrete floors, even under the most punishing traffic conditions . . . make repairs or resurface an entire area with tough RUGGEDWEAR Resurfacer. No chopping or chipping required. Merely sweep out the spot to be patched—mix the material—trowel it on. Holds solid and tight right up to irregular edge of old concrete. Cellulose-Processed to provide a firmer, tougher, smoother, more rugged wearing surface. Used indoors or out. Dries fast. Low in cost.

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Please send me complete RUGGEDWEAR information . . . details of FREE TRIAL OFFER—no obligation.
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Company .....
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Every fastening user should have Harper's 1942 Catalog and Buyer's Guide. It contains numerous tables of standard dimensions, weights, chemical properties, physical properties, etc. Describes **4320 STOCK ITEMS** of Brass, Bronze, Everdur, Monel and Stainless Bolts, Nuts, Screws, Washers, Rivets and accessories . . . and numerous special fastenings made to order.

Shipments subject to needs of Defense and essential industries. Catalog available to anyone who can use it.

THE H. M. HARPER COMPANY
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HARPER Chicago

that it will not be as good over a long period of time as the aluminum base die casting. It again is one of the things which can be seen and the failure of the finish will be a gradual process which can be attended to by repainting as required.

At our East Pittsburgh, Pennsylvania, plant, nearly all of our chrome nickel steel has been or is being replaced by chrome molybdenum. The tungsten high speed steel is partially replaced by carbon molybdenum steel, which, while not as good as the tungsten steel, still gives fairly satisfactory service on simple single edge tools. It is not adaptable to blanking dies, so for these, a high chromium carbon steel is being used. This marks rather badly, so it is necessary to make our dies for stator and rotor punchings out of many small pieces, hardened, assembled and then ground to final shape and size. This greatly increases the cost, but provides a die that does the work.

* * *

PROGRESS IN STANDARDIZATION

"Standardization is going forward in this country at a rate never reached before," said R. E. Zimmerman, president of the American Standards Association at its recent annual luncheon meeting in New York City. Three hundred representatives of trade, technical, and governmental groups who hold membership in the American Standards Association gathered at the Hotel Astor to hear Mr. Zimmerman and J. Lessing Rosenwald, head of the new Bureau of Industrial Conservation of the OPM, and R. P. Anderson, chairman of the Standards Council of the American Standards Association.

All three speakers dwelt on the part that the Association is playing and can play in the country's defense program. "This entire defense effort," said Mr. Zimmerman, "has been seriously hampered by the diversity of specifications and requirements for products—acutely so in the case of strategic materials.

"What a boon it would have been to the industries of this country if at the beginning of the defense effort we had had 5,000 good, seasoned American Standards instead of five hundred! Many a manufacturer who is today facing a shut-down as a result of the defense program through lack of scarce materials would have been able to carry his full part in production had we had a full complement of American Standards to which our manufacturers, big and little, were accustomed to working."

Commenting upon some of the work specifically dealing with defense needs, Dr. Anderson said: "Last January, the Association seeing that it would be called upon for special services, adopted a short cut emergency method of developing standards needed for defense. This action was related to that of the British and Australian associations, both of which have been issuing defense emergency standards under a similar procedure. Four such standards have already been developed. One provides a series

Sign of the Times

Accredited Distributor

REPUBLIC RUBBER PRODUCTS

THE Industrial Distributor is a mighty busy man today. Most efficient, rapid source for all kinds of industrial equipment, his unique services are taxed to the limit by industry under pressure of the defense program. His is the job of bridging the gap between manufacturing-supplier and manufacturing-consumer . . . cutting precious hours off delivery and installation dates on vital items of equipment.

A nationwide network of these local business men—leading representatives of their field—comprise the one outlet for Republic Mechanical Rubber Products. Carefully chosen for their particular qualifications to sell and service mechanical rubber needs, these accredited distributors display Republic's emblem of approval and are, in fact, a coordinated part of the Republic organization. A true "sign of the times," the Republic Distributor Emblem assures the maximum advantages of today's most advanced method of distribution . . . REPUBLIC RUBBER DIVISION OF LEE RUBBER & TIRE CORP., YOUNGSTOWN, OHIO.

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HOSE • BELTING • MOLDED GOODS
PACKING • EXTRUDED PRODUCTS

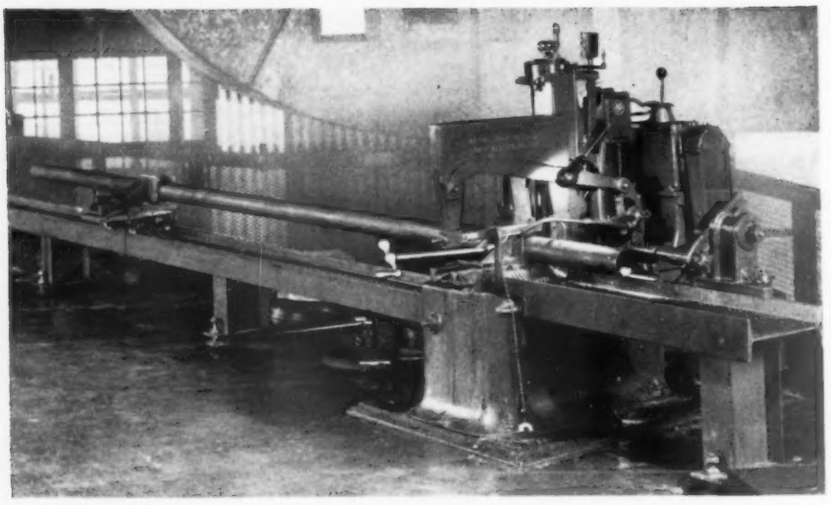
of tests for the accuracy of engine lathes, one of the most important tools of defense production. Two others cover control of quality in mass production, thus helping the manufacturer spot trouble before that trouble becomes bad enough to cause rejection of his product by the inspection department. The fourth completed emergency standard sets up safe concentration limits for cadmium, which constitutes a hazard in certain defense plants. A dozen additional emergency standards are in the process of development.

"Still along the lines of defense, the American Standards Association has been requested by the Office of Price Administration to undertake four projects, three of them for commonly used household appliances like refrigerators. The purpose of these particular jobs is to assure the public of the quality of these products in the face of shrinking supplies of raw materials and to conserve production space needed for war orders.

"A proposal has just been made for standards for floodlighting of defense plants, in order to reduce risk of fire and theft, and to make night work possible as well as safer.

"I believe that one of the most important jobs, perhaps *the* most important job for the association during the coming year lies in its program of Defense Emergency Standards."

In line with the increased interest in standardization, Mr. Zimmerman welcomed five new national organizations



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cut-off metal the economical way

● The most economical method of cutting-off identical pieces from bar steel is with a MARVEL Automatic Production Saw. It will give you more pieces per hour, per machine and per dollar cost than any other accurate cutting-off method. Figured in cost per piece, it will have the lowest tool cost and the lowest labor cost too, because MARVEL Automatic Saws operate with no more attention than an automatic screw machine. They keep chip loss down to a minimum and on many jobs will give you extra pieces per bar.

For fast automatic production or for single-cut miscellaneous work, MARVEL 6A or 9A Hack Saws are fast, accurate tools. Capacities 6" x 6" or 10" x 10", single or nested bars. Write today for Bulletin No. 600.

ARMSTRONG-BLUM MFG. CO.

"The Hack Saw People"

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TURN TO PAGE 45

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PURCHASING PREVIEWS

is a monthly letter of news and comment direct from the Nation's Capital, prepared through the facilities of our Washington office and specially keyed to the interests of the purchasing executive. Keep in touch with "Previews".

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These 11 gauge wall 90° elbows are available from stock in Stainless Type Nos. 308, 316, and 347 in 2", 2½", 3", 4", 5", and 6" I. D. sizes. Write for list prices and description of complete line.

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Do Defense Duty Too!

In many busy industries deep in the Defense effort **you'll find Eagle Oilers** on the Production Line for Defense. Where rugged performance and production speed count most—in Aircraft factories—Tank plants—on Battleships Eagle Oilers are doing their bit. You can step-up your production too, if you **standardize with dependable Eagle Oilers.**

● Eagle Hydraulic Pump Oilers have seamless drawn steel bodies — acetylene welded spouts — will pump any oil, from any angle. All parts easily renewable.

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If your jobber can't supply you—

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YOU AND WE HAVE AN AXIS TO GRIND!

A single purpose guides all of us today. You and we have but one goal to reach—just one to work and fight and think toward. Every minute of time and every ounce of energy must be directed to that end. It will be done! We all know that.

Here at Accurate we've been busy. Very busy, like you. Machines and men and space are used to capacity. We are cooperating to the limit with our customers—and they with us. But none of us should be satisfied with doing our best. We must do better. That's how America has accepted every Challenge . . . and thereby always achieved its goal.

If you need springs, wireforms and stampings for this job of ours, let us see if we can help you.

Accurate Springs

ACCURATE SPRING MANUFACTURING CO.

3825 West Lake Street Chicago, Illinois

When writing Accurate Spring Manufacturing Co. please mention Purchasing

Life-Long
SERVICE

In these days of speed-up, industry takes no chances with chains. UTMOST QUALITY — Reputation standardized by years of service — is insisted on.

Taylor-Made CHAINS

By "proof-test" — by *many years* most crucial service — T-M Chains stand at top with DEPENDABILITY PLUS.

T-M Alloy Steel Chains science's *highest achievement* in strength and toughness. Flash Alloy and Electric Welding give ductility, fine-grain, and give the *utmost resistance* to work-hardening, temper brittleness.

Types and sizes of chains for every load and use—inside, outside—big mill sling-loads—draglines—conveyors—machine chains —towing.

All chain accessories. PROMPTEST SERVICE. Send today for Latest T-M literature.

S. G. TAYLOR CHAIN CO.
HAMMOND, INDIANA

into the membership of the Association:

The American Institute of Steel Construction
The Association of Gas Appliance and Equipment Manufacturers
The National Lime Association
The Metal Lath Manufacturers Association
The American Hotel Association

All of these with the exception of the Hotel Association are already active in ASA work. The new members make a total of 77 national organizations holding membership. "It is interesting to note," said Mr. Zimmerman, "that the Association started twenty-three years ago with a membership of five engineering societies—later on broadened to include some trade associations in the heavy industries—and that nearly all of the early work consisted of interchangeability of parts, and of specifications for materials. In the years since then, many new groups have become interested in standardization work. These have brought to the Association jobs in the mining field, in civil engineering and building, and in many other fields.

"Recently we have made another big departure from the work with which we started twenty-three years ago, in undertaking the development of a whole series of standards for consumer goods.

"Connected with this work a proposal has come to the Association that in addition to its standardization work on consumer goods it develop a program on certification of products as conforming

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Makes Easy Mailing of Hard-to-Wrap little things
RED TYE
FROM CHASE BAG CO. RED TYE Mailing Bags
All Sizes All Kinds
FABRIC BAGS with and without TAGS or ENVELOPES

Bulky packages cost more. Avoid unnecessary expense and trouble by using sturdy Chase Mailing Bags. For nuts, bolts, spare parts, samples, odd shaped articles. Eliminate "under separate cover"!

Write for prices!

CHASE BAG CO.
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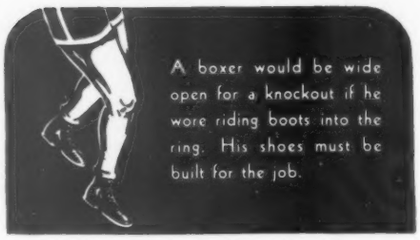


Casters, too, must be built for the job

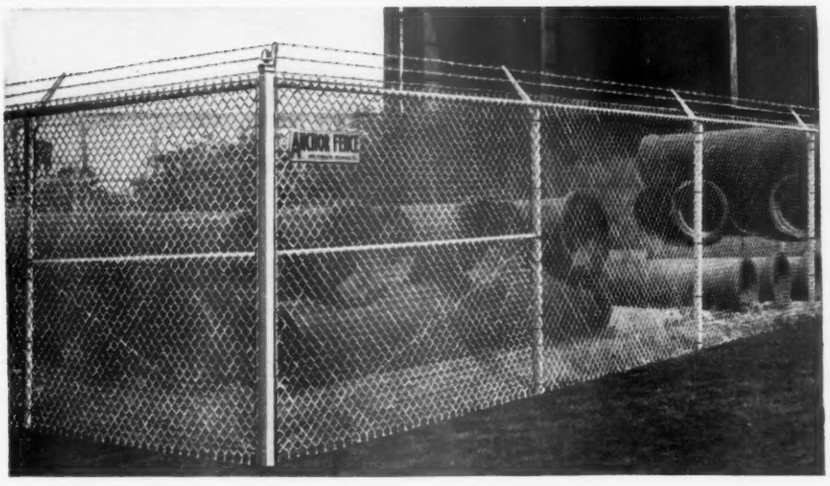
AVOID snarls in materials handling! Put *built-for-the-job* Bond Truck Casters on all your trucks. These carefully designed casters *take the punishment . . . take the loads . . . take the turns.* The Bond 136-A (illustrated) features especially designed double ball races to promote smooth rolling and absorb shock. For guidance in fitting your casters to the job, write today for your free copy of the Bond Data Book.

Bond Lift Jacks and Platforms offer built-for-the-job advantages, too. Write for bulletin.

BOND FOUNDRY & MACHINE CO., MANHEIM, PA.

Bond REG. U.S. PAT. OFF.
TRUCK CASTERS

How to Expand Your Plant without waiting to build!



Use the Outdoors for Storage -- behind an ANCHOR FENCE

IN these troublesome times, an Anchor Fence *around* your plant does double duty: (1) It releases valuable indoor space for production by permitting safe bulk storage outdoors; (2) it shuts out trouble-makers by controlling incoming traffic—with minimum expense for guards and maintenance.

For more complete protection against spies and saboteurs, defense plants also need special Anchor enclosures *within* the plant—to keep unauthorized persons away from power stations, transformers, chemical and material stocks, fuel supplies and other vital points.

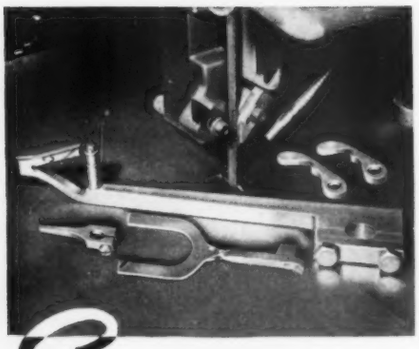
Anchor Fences can be quickly erected in any soil, in any weather, even when the ground is frozen. The exclusive, patented, driven "Anchors" hold the fence erect and in line, resist terrific force, yet can be moved without loss in case of plant expansion.

Send for an Anchor Fence Engineer. Get the benefit of Anchor's 50 years of industrial fencing experience. Write for Fence Catalog—and name of nearest Anchor Fence Engineer. Anchor Post Fence Co., 6615 Eastern Ave., Baltimore, Md.

1892-1942 Fifty Years of Service

YOUR BEST DEFENSE IS AN ANCHOR FENCE

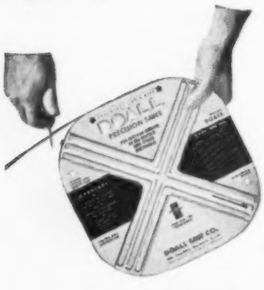
NATION-WIDE SALES AND ERECTING SERVICE



Easy as PIE FOR DoAll SAWS

Yes Sir, they go right through any kind of metal or alloy with a speed and smoothness that is astonishing. Above parts, formerly cut by hand, are now sawed on the DoAll without blueprints, for an automatic paper file folding machine at Linder Mfg. Co., Minneapolis. Savings in time are tremendous, according to Mr. Linder.

And, not satisfied with cutting ordinary metals, DoAll Saws do a real job on such tough ones as cold rolled nickel, laminated low carbon sheet steel, Neoprene, aluminum alloy, bronze, semisteel castings, etc.



Available in various lengths, each saw comes in a patented metal box, with a slot for saw to be pulled out and cut off as required.

42 STANDARD SIZES

DoAll Band Saws come in every size approved by the OPM, in Raker tooth, heavy set, A temper.

FREE BOOKLET

"Actual Performance Records of DoAll Saws." Send for copy. It's short and interesting.

DO ALL SAWS

THE DOALL COMPANY

1214 Thacker Street Des Plaines, Ill.

Associated with Continental Machines, Inc., Minneapolis

to standards. The suggestion is that the Institute of Standards which was organized for the certification of consumer products should be merged with the American Standards Association. The Board has authorized a study of the subject.

"The war has, of course, disrupted international cooperation in standardization work. It has, however, greatly stimulated interest in Inter-American cooperation in standardization work. Such cooperation offers an effective means of improving trade relations from which both the Latin American countries and the United States would benefit.

"A special committee of the Association appointed to consider the whole question of Inter-American cooperation recommends a broad program which would include: the exchange of information and material with all Latin American organizations doing significant standardization work, arrangements for translation of standards into Spanish and Portuguese, and intimate cooperation with each country in the development of its standards."

Summarizing the work accomplished by the Association in the past 12 months Dr. Anderson said:

"This year we have approved 130 standards plus four emergency standards developed under the short-cut procedure approved by the Standards Council last January for handling defense work. Of the 130 standards approved, 69 were new and 61 revisions of previously completed

"TO ECONOMIZE

Galvanize

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Over 40 years' steady growth (we've recently had to enlarge our plant again) has made ENTERPRISE one of the largest, most modern and best equipped galvanizing plants in the country.

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are assured. We have the capacity.

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or small order . . . no effort is spared to assure a good job to meet the most exacting specifications.

We ship via boat, truck or any railroad. Phone or write for prompt quotation.

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There is NO SHORTAGE of VICTOR BLADES

Having successfully absorbed our share of defense work, we can make full and prompt delivery of all orders for VICTOR Hack Saw Blades on our new National Emergency List. So can your VICTOR Distributor.

FREE Booklet "Metal Cutting"

20 fact - packed pages on use, selection and care of hack saw blades and frames — liberally illustrated. Write for it.

VICTOR HACK SAW BLADES, formerly packed in modern metal boxes now come packed in the new cardboard Defense box.

VICTOR SAW WORKS, INC.
MIDDLETOWN, N. Y.

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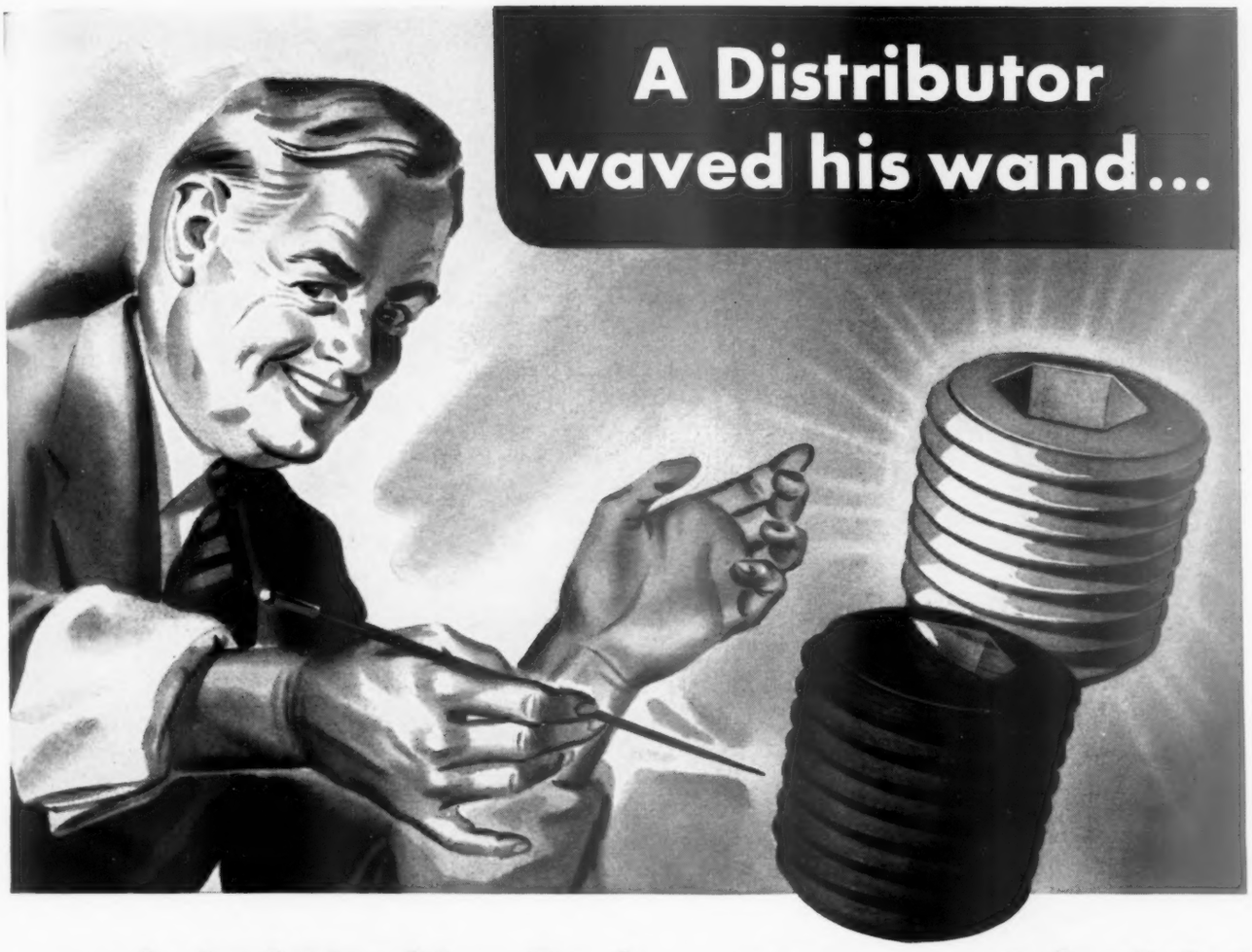

..and vital Machine Tools went out on Schedule!

"But I can't use those threaded plugs!" protested the machine tool manufacturer. "They're black—look! *I've* got to have 'em tinned—here, like this one, see? And we can't ship presses with the oil holes open!"

Well, of course there was a resourceful Distributor on the receiving end of this chat and he had a friend who knew about plating. And in a jiffy the plugs were completely treated and the presses were shipped on the dot.

Sure enough—you may never need *plating counsel* from your Distributor. But how fine to remember when you get into *any* jam, that he is just as near as your telephone and ready to pitch in with whatever the help you need most!

Perhaps the whole story of the Industrial Distributors' contribution to Defense Production will never be told. But *you* know and *we* know they deserve a lot of credit—so we are going right on with our years'-long policy of distributing Drills and Reamers to you through their capable hands.

This incident is typical of the unusual services that many Mill Supply Distributors are rendering their customers during the Emergency.

We favor adequate Preparedness for National Defense

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TRADE MARK REG. U. S. PAT. OFF. AND FOREIGN COUNTRIES

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When writing The Cleveland Twist Drill Company please mention Purchasing

DON'T LOSE
DEFENSE PRODUCTION GAINS
HERE!

● Production has been stepped up to meet defense needs—only to have many of those gains lost in the shipping room. There must be no delay in the delivery of defense products. General Box standard and specially designed shipping containers are helping hundreds of manufacturers to smash the shipping room bottleneck. In addition, damage is eliminated—hours and dollars are saved—valuable shipping room space is conserved.

Why not see how General Box crating engineers can help you in the shipping of your defense products? They will be glad to work with you in determining the box, crate or special container which best meets today's requirements.

13 PLANTS STRATEGICALLY LOCATED

There is a General Box plant near you with the production facilities and modern equipment to make containers for practically every type of product. They can help your shipping room keep up with your defense production.

SEND FOR THIS FREE MANUAL

Important economies are being made through the use of General Boxes and Crates. This illustrated booklet shows how products similar to yours are being delivered faster, safer and more economically. Mail the coupon!

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General Offices: 48 West Illinois St., Chicago, Ill. *District Offices and Plants:* Brooklyn, Cincinnati, Detroit, East St. Louis, Kansas City, Louisville, Milwaukee, New Orleans, Sheboygan, Winchendon. Continental Box Company, Inc.: Houston, Dallas.

Send a free copy of the new manual, "How Research Can Save $$ for You."

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City ..... *State* .....

jobs. The total output of standards this year is double that of any year in our history.

"Last year four new standardization projects were undertaken. This year we have started no less than fifteen. This means that we have more than tripled the number of new projects to be undertaken as well as quadrupling the output of new standards.

"This year has seen approval and publication of the first standard in the new building code program. It has also seen approval of the first standards in the field of photography. Included among the more than a hundred standards completed are a number for gas appliances, several in the toxic dusts and gases field, a record number in the mechanical field, specifications for pigments, tests for petroleum products, and the first of a series of standards on sizing children's clothing.

"The Institute of Traffic Engineers has recently submitted its standards for adjustable face traffic control signal heads to the American Standards Association for approval. This standard, if approved, will constitute as far as the lenses are concerned, a revision of the first standard ever developed in the traffic field, known as the American Standard for Colors for Traffic Signals, approved in 1927. This standard made a major contribution to highway traffic operation by eliminating inconsistencies in the use of the various colors in traffic signals. It is largely because of this standard that you can drive your car all over the United States today, stopping on the red light, starting on green.

"Important progress has been made this year toward protection of workers

DEMAND!

These 3 (Three) **SAFETY FACTORS** *in your* **GRANULATED INDUSTRIAL SKIN CLEANSER**

1. pH Below 10
2. No Free Alkali
3. Low Alkaline Salts (not to exceed 8% calculated as sodium Carbonate) buffered and balanced against pH.

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Non Acid Sodering Flux
Soder All Metals
Fast working — Dependable
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ALL-OUT PRODUCTION

Industry knows Productimeters. Years of research and engineering are behind their accuracy...their speed... their precision...their rugged construction...their dependability for reliable production control. PRODUCTIMETERS are prepared *now* to answer the call on our first line of defense, the production machines of America.

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DURANT MFG. COMPANY
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159 Eddy St. Providence, R. I.

PRODUCTIMETERS
THE SPEEDOMETERS OF INDUSTRY

..often decides the score! And *ame*SACKS are heavy hitters, too—saving time and money, building customer good-will.

PARTS BAGS

Cotton Bags with drawstrings. Small parts go into bag, which is tied securely to product. No lost parts, annoyance or delay.

PARCEL POST BAGS

Cotton Bags with drawstrings and address tags. Save up to 90% packing time and up to 50% postage. Handy, efficient, economical.

Write for Samples and Prices

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Let BLACK & DECKER Help You Get

More Defense Output Per Square Foot

COMPACT, light-weight Black & Decker Portable Electric Tools enable you to utilize all available floor space, to attain maximum Defense production capacity. Whether your contracts cover drilling, grinding, cutting, surfacing or assembling operations, "Electric Tool Headquarters" can serve you with—

1. The engineering "know-how" to produce tools specifically designed to solve definite production problems;
2. Dependable advice on Defense tooling up, through the largest field force in the electric tool industry;
3. 120 different types of portable electric tools, a few of which are illustrated here;
4. A convenient and informed source of supply, through leading distributors in all principal cities;
5. Prompt repair and parts service, from 26 factory-owned branches located coast-to-coast.

These expanded facilities indicate how Black & Decker is "doing its bit" to help industry and the nation in this emergency. The Black & Decker Mfg. Co., 764 Pennsylvania Avenue, Towson, Maryland.

DRILLING MOTOR NACELLE with Black & Decker HOLGUNS. Built for continuous service, these light-weight Electric Drills are stepping up aircraft drilling operations in almost every aircraft plant in the country.

COMPACT, POWERFUL BENCH GRINDERS made by Black & Decker save space and time, when spotted at handy points. Sharpen tools, grind, wire-brush and polish.

SPEED DEFENSE ASSEMBLY OPERATIONS with Black & Decker Electric Screw Drivers and Nut Runners. 27 models, with features and capacities to meet every production requirement.

Photo courtesy Public Information, Canada

AIRCRAFT WORKER using Black & Decker Lectro-Shears to cut patterns from stainless metal. These Lectro-Shears cut through metal like a knife through butter.

LEADING DISTRIBUTORS EVERYWHERE SELL

Black & Decker

PORTABLE ELECTRIC TOOLS

Free **HANDBOOKS**

Help You Tool-Up For Defense

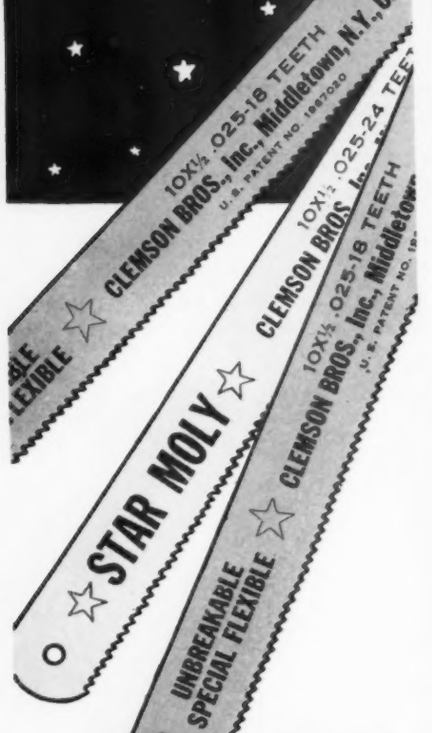
Write for Black & Decker's Assembly Tool Handbook, 1942 Complete Tool Catalog, Electric Saw Handbook, or Hammer Handbook — according to your requirements.

When writing The Black & Decker Mfg. Co. please mention Purchasing

CLEMSON

Is Prepared to Meet Present-day Demands for
STAR HACK SAW BLADES

Having absorbed our full share of the Defense demands we are maintaining adequate stocks in our distributors' hands to fully meet the needs of their customers. Sales and production now conform to the National Emergency List effective January 1, 1942.



FREE!

20-page book of Metal Cutting hints, blade selection, use, and care—illustrated throughout with tables, and diagrams covering practically every metal cutting operation.

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MIDDLETOWN, N. Y.

Please send me free metal cutting booklet.
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2045

from harmful effects of toxic dusts and gases. The American Standards Association has approved the first four American Standards for Allowable Concentrations of Toxic Dusts and Gases this year. These standards deal with carbon monoxide, hydrogen sulphide, carbon disulphide, and benzene. The need for this work has been recognized for a long time by industry, health officials, labor departments, insurance companies, and others responsible for the protection of workers.

"A whole series of new projects has been started in this industrial health field. Some are for toxic substances used widely in defense production and have therefore been placed on an emergency basis; but many of the others are to protect the ordinary industrial worker from concentrations of toxic dusts and gases developed in peacetime production. Some 22 substances are already under consideration, many well on their way to completion.

"One of the 'firsts' in a new field is the standard on body sizes for boys' garments, which was approved in June after more than three years' work by a committee of retailers, manufacturers, pattern makers, and consumer representatives. This particular standard lays the basis for getting rid of one of retailing's worst headaches by opening the way for simplifying and standardizing the sizes of children's garments. It should also eliminate the problem of returns which retailers set as high as ten million dollars per year. The standard just completed covers boys' sizes in the age range from kindergarten through junior high school."

MULTIPLEX DISPLAY FIXTURE FOR SALE

A #63 Floor type revolving Multiplex Display Fixture with a ten wing capacity, complete with 10 wings 24″ wide by 36″ high, 1″ beveled moulding frames, fillers of thumbtack board covered with brown burlap.

Entire fixture finished in crinkle antique bronze.

Complete with shipping case. Ideal for display of advertising material, for convention exhibits or in office maps, charts. In excellent condition.

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Objective
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Solution
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in one continuous production line

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MICHIGAN WIRE CLOTH COMPANY
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DAYTON GRINDING WHEELS
A complete line of abrasive wheels. Inquiries given prompt attention.
SIMONDS WORDEN WHITE CO.
DAYTON, OHIO

CAN THE FUTURE BE FORESEEN HERE?

To the ancients the night sky was a perpetual mystery, from which glib opportunists predicted the fortunes of love, war and commerce. Ignorant of the simple key to astronomy, the course of the planets around the sun, men of old named them "the wanderers," believed their movements controlled every activity of mankind.

Today men ignore the flight of a planet through space . . . knowing that "he profits most who serves best" is a far better business guide. It is clear to us at Keasbey & Mattison that most of our orders tomorrow will come from you who are using our materials today, that our future depends on continually improving our products so that they will serve you better.

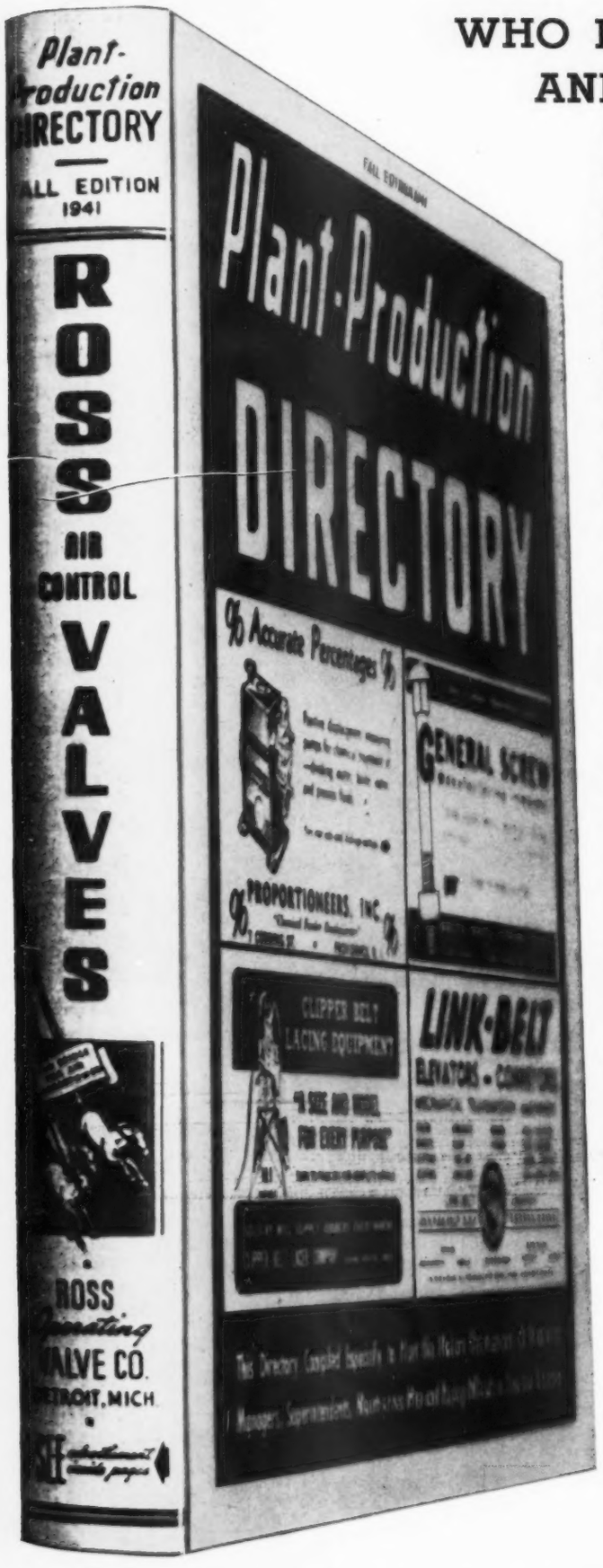
At present we are willingly complying with National Defense requirements, and we realize that this is causing inconvenience to many of our customers in other industries. But our research laboratories are working on improvements and new materials that will help you in the future. In what way can we benefit you most? Can you tell us of a specific problem of yours which might be solved by a new application of asbestos? Anything you suggest will be carefully studied with the hope it will prove practical for us to manufacture. A letter from you now will help us to serve you better in the days ahead.

* * *

Nature made asbestos; Keasbey & Mattison has made it serve mankind . . . since 1873.

KEASBEY & MATTISON
COMPANY, AMBLER, PENNSYLVANIA

When writing Keasbey & Mattison Company please mention Purchasing



WHO MANUFACTURES IT — AND WHERE CAN WE BUY IT?

Two of the most vital questions asked by industry today.

Hundreds of companies are now manufacturing equipment foreign to them a year ago. As a result, new and different sources of supply are necessary. Also, many former sources have been virtually lost to manufacturers. How are new sources to be found? Time is short—and there can be no delay. What's the answer? PLANT-PRODUCTION DIRECTORY has been developed for just such an emergency. Here you can find, in a minimum of time, the names and addresses of manufacturers of every conceivable type of industrial equipment, products and supplies.

Thousands of companies have already written the publishers of PLANT-PRODUCTION DIRECTORY enthusiastically acclaiming it the greatest improvement in industrial directory publishing ever developed. It has been a life-saver to them in these unusual times.

They also state its weight of only six pounds makes for easier and more universal use. They find the elimination of thousands of unnecessary classifications has saved them hours of searching time. They emphasize the advantages of a more easily read type face—and a better grade of paper.

And they particularly appreciate the new high-speed four column page which results in a tremendous reduction in time spent securing information.

In case you are not already using PLANT-PRODUCTION DIRECTORY—and in your work you require source of supply information, you will find PLANT-PRODUCTION DIRECTORY your most able assistant.

Plant-Production DIRECTORY

333 N. Michigan Ave., Chicago; 205 E. 42nd Street, New York; Leader Building, Cleveland

A Conover-Mast Publication

Sources of supply found quicker and easier with PLANT-PRODUCTION DIRECTORY

NEW ORDER P-100 COVERS REPAIR, MAINTENANCE AND OPERATING SUPPLIES

● Order P-100 issued by the Priorities Division, OPM, replaces P-22, covering the acquisition of Repair, Maintenance and Operating Supplies. It has been rewritten to simplify and facilitate the application of ratings permitted for these items, to assist in compliance and relief from undue hardships, and to clarify some provisions of the previous order whose interpretation was in doubt. In general, the new order closely follows P-22, as amended. The principal exceptions and changes are:

1. The rating granted by P-100 may not be used for the replacement of any item carried on the producer's books as a fixed asset.
2. The provision stating that the rating shall not be applied unless material cannot be obtained without it, has been deleted.
3. P-100 will permit suppliers who do not physically alter the parts which they supply, to replace material shipped against preference ratings granted by this Order, or by Order P-22. The suppliers will also be permitted to collect the ratings served on them under this Order (or formerly, under P-22) for a period of three months, retroactively if necessary, so as to purchase in commercial quantities.
4. Operating supplies have been redefined so as to prohibit the use of the rating for fuel and non-ferrous packaging supplies.
5. P-100 provides that when any General Preference ("E" or "M") Order assigns a specific preference rating to deliveries of any particular material to be used by a particular industry or for a specific purpose, such preference rating shall control and the

CONTINUOUS Belt Operation

CLING-SURFACE Belt Treatment helps belts handle heavier loads *continuously!*

1. Cling-Surface Belt Treatment increases production by permitting belts to run for longer periods of time.
2. Easy to use—a little goes far.
3. Bearing and shaft wear reduced.
4. Increases life of all belts by permitting slack operation.
5. Lowest cost treatment. Write today for free trial: Cling-Surface Co., 1018 Niagara St., Buffalo, N. Y.

SINCE 1896 *THE* BELT TREATMENT WORLD-OVER
CLING-SURFACE CO.

Count On Veeder-Root

to make Defense Work move Faster

Every stroke of armament work is made to count to the utmost . . . and if the tempo lags, it shows immediately on Veeder-Root Counting Devices. So adjustments can be made instantly, output and quality kept up to top levels. Veeder-Root facts-in-figures provide a running control that helps prevent "duds", shortages, delays.

Today, in key plants where Defense Work is most grimly urgent, the score is continuously kept by Veeder-Root Counting Devices. And if you're in the ranks of Defense production, why not let us help *you*, too?

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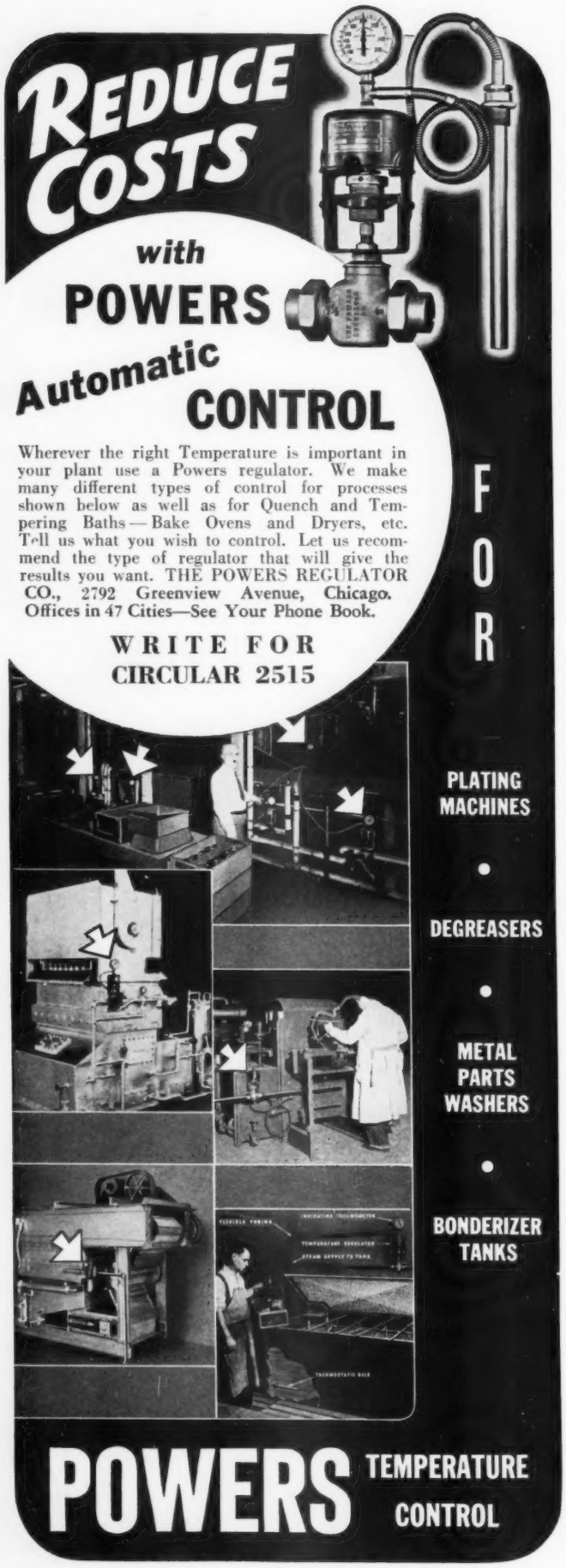
OFFICES IN Boston, Chicago, Cincinnati, Cleveland, Detroit, Greenville, S. C., Los Angeles, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco, Montreal, Buenos Aires, Mexico City, London, Shanghai, Melbourne. In England: Veeder-Root Ltd., Knighton, Radnorshire. In Canada: Veeder-Root of Canada, Ltd., Montreal.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CONTROL
Wherever the right Temperature is important in your plant use a Powers regulator. We make many different types of control for processes shown below as well as for Quench and Tempering Baths — Bake Ovens and Dryers, etc. Tell us what you wish to control. Let us recommend the type of regulator that will give the results you want. THE POWERS REGULATOR CO., 2792 Greenview Avenue, Chicago. Offices in 47 Cities—See Your Phone Book.
WRITE FOR CIRCULAR 2515
FOR
PLATING MACHINES
DEGREASERS
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BONDERIZER TANKS
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rating granted by P-100 will not be applicable. The Order provides further, that the preference rating granted by P-100 may not be applied to deliveries of any material to be used for purposes prohibited by any Order or Regulation issued by the Director of Priorities.

6. The inventory restrictions in Paragraph (g) have been simplified in a manner which, it is believed, will permit compliance where necessary and quick relief where necessary.

1 1 1

PETROLEUM INDUSTRY SEEKS GREATER PRODUCTION

● While present inventories and production of petroleum in the United States are ample for all current needs, the industry is preparing for the possibility of much heavier demands. That production facilities are expected to be utilized to the limit is indicated by large purchases of producing properties and appeals to the various State conservation authorities for increased allowable output that would enable the producers to build up larger inventories above ground. A nation-wide program is proposed for the building of underground tanks at strategic points, where refined products may be stored.

Meanwhile the War and Navy Departments are surveying potential war needs for oil. Preliminary figures from these studies indicate that a sharp increase in consumption will be disclosed, which would call for a mobilization of oil transportation facilities, the elimination of all preventable waste in production and consump-

JUST LIKE THAT
— it cuts metal — bolts up to 3/4" diameter, and with special jaws cuts case hardened steel. Sizes from "hip pocket" little 3½ foot giant. Stock models to meet working conditions and cutting problems. Every one of amazing capacity, endurance and ease of operation. Fine tools precision built by skilled tool makers.
Send for this catalog giving valuable information about time and labor saving in using two-hand portable metal cutters. Note: We are using every available machine and every available man, twenty-four hours a day, to meet Government requirements, and especially to meet our jobbers' needs with the earliest possible shipments.
H. K. PORTER, INC.
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PORTER CUTTERS
SEND FOR CATALOG
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tion of petroleum products, and possible curtailment of civilian use. The executive committee of the Petroleum Industry Council for National Defense has already launched a study to find what waste may exist and how it can be prevented.

The Texas Railroad Commission, in charge of oil proration in that state, has made a survey of the 95,000 oil wells in that area to see which ones can best produce greater quantities of oil for war use, and has made a proposal to permit full production from about half of the existing wells so as to release steel tubing and other equipment for new drilling operations.

It is pointed out that war activity is likely to be concentrated in the coastal areas, and that production and transportation facilities in those districts may be most severely taxed. Full mobilization of the industry on the Pacific Coast is already under way at the direction of the Federal Oil Coordinator's staff, working with the Petroleum Industry Council. Diversion of transportation equipment to this area has again raised the possibility of shortages on the Atlantic Seaboard. The latter development will be averted so far as possible, but strict conservation of supplies will be asked.

* * *

LEND LEASE PROGRAM

● President Roosevelt's quarterly report to Congress on the progress of the lend-lease program shows that at the end of the first eight months (i.e., on November 30th) of the nearly 13 billion dollars appropriated, more than 9 billions have been allocated and more than 5¼ billions have been obligated in contracts under ten main categories, as follows:

Manufacturer of

STEEL STRAPPING

Nailless

Nailed On

Car Banding

STRAPPING TOOLS

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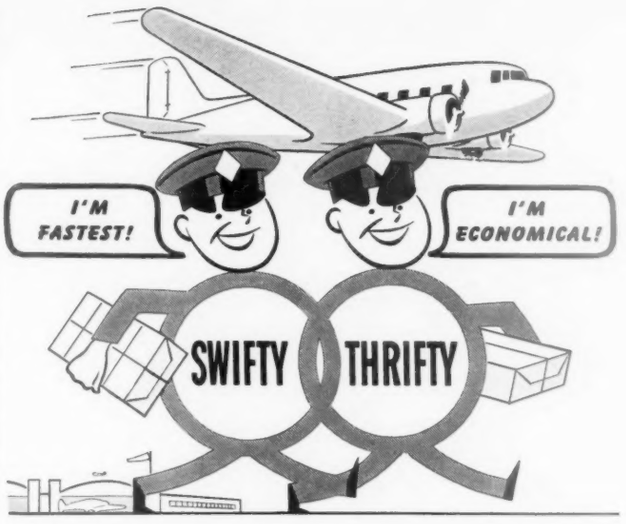
THE STANLEY WORKS

Steel Strapping Division

New Britain, Conn.

STANLEY

TRADE MARK



"WE FLY WITH EVERY SHIPMENT YOU SEND BY AIR EXPRESS!"

Meet "Swifty" and "Thrifty"—the AIR EXPRESS co-pilots. They always fly together, giving you the "double" advantage of super-speed and economy whenever you send a shipment this FASTEST way. Today, with war emergencies demanding utmost speed and economy, AIR EXPRESS is more vitally necessary than ever. At 3 miles a minute, AIR EXPRESS wings anything from pound-packages to ton-heavy industrial equipment—as far as 2500 miles overnight! The cost? Low AIR EXPRESS rates are even more economical when you consider the valuable hours, days – even weeks saved in shipping time. *Special* pick-up and *special* delivery at no extra charge within regular Railway Express vehicle limits in all cities and principal towns. Find out about it – phone Railway Express, AIR EXPRESS DIVISION.

EXAMPLES OF AIR EXPRESS ECONOMY

(Minimum Charge $1.00. Rates by Air Miles)

Air Miles	1 lb.	3 lbs.	5 lbs.	10 lbs.	25 lbs.
200	$1.00	$1.04	$1.12	$1.32	$2.00
500	1.00	1.28	1.60	2.40	5.00
1000	1.00	1.68	2.40	4.20	10.00
2000	1.00	2.48	4.00	8.00	20.00
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Proportionately low rates on heavier shipments

Direct 3-mile-a-minute service between over 370 key cities. Coordinated air-rail connections to 23,000 off-airline points. Also International AIR EXPRESS to and from scores of foreign countries.

'FASTEST WAY' MEANS AIR EXPRESS

AIR EXPRESS

Division of **RAILWAY EXPRESS**

Buy HIGH Pressure Fittings For LOW Pressure Service

It Makes Sense This Year!

You can save yourself money and trouble by using W-S High Pressure High Temperature Forged Steel Fittings even where pressures and temperatures are only moderate. It has been proved that their longer life under such conditions outweighs the additional cost. But more important, you will insure yourself against breakdowns and replacements in future months when all kinds of fittings may be a lot more expensive and a lot harder to get.

W-S Forged Steel Fittings in both welding and screw end types are available from distributors' stocks in a wide range of sizes and pressure ratings. The Watson-Stillman Co., Roselle, New Jersey.

Write us for Bulletin A-3— **NOW!**

THEN call your nearest Mill Supply Distributor

WATSON-STILLMAN

Engineers and Manufacturers of Forged Steel Fittings and Valves, Hydraulic Machinery and Equipment — Hydraulic Presses, Pumps and Jacks

2151

	Allocated (Millions of Dollars)	Obligated (Millions of Dollars)
Ordnance and ordnance stores	2,215	947
Aircraft and material	2,040	1,727
Tanks and other vehicles	628	316
Ships	1,303	713
Miscellaneous military equipment	311	70
Production facilities	757	427
Agricultural and industrial commodities	1,665	930
Servicing, repairing of ships	167	109
Services and expenses	95	3
Administrative expenses	5	1
	9,186	5,243

The extent of the support thus far extended amounts to $1,202,000,000, and actual exports have amounted to $595,000,000. The latter figure does not include ships which have been transferred to lend-lease countries nor material which has been transferred but which is used in this country for training purposes, etc.

In March, the first month of the program, lend-lease aid amounted to 18 million dollars. The rate has increased with each successive month, to 283 million dollars in November.

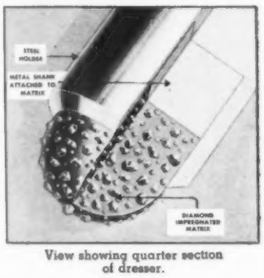
A breakdown of the material transferred shows vast quantities of non-military goods, an indicator that the United States is becoming the larder as well as the arsenal of the democracies. The non-military items included: meat and fish products, milk products, egg products, fruits and vegetables, grain and cereal products, sugar and related products, cotton linters, raw cotton, leaf tobacco, petroleum products, fertilizer, iron and steel, and non-ferrous metals.

No need to worry about new men—apprentices—accidentally mishandling *this diamond dresser*. The Carboloy dresser stands abuse—can *really "take it"*! Contains diamonds permanently embedded in a special, protective, Carboloy matrix approaching the diamond itself in hardness. Holds stones firmly throughout long useful life. Requires no resetting . . . a simple quarter turn in holder daily, provides a new cutting surface.

Use abuse-proof, loss-proof Carboloy diamond-impregnated dressers in your shop and forget your diamond worries under present rush conditions.

Reasonably priced—Send for catalog DR-100

CARBOLOY COMPANY, INC.
11191 E. 8 Mile Blvd., Detroit, Mich.
Chicago, Cleveland, Los Angeles, Newark, Philadelphia, Pittsburgh, Worcester, Mass.



View showing quarter section of dresser.

CARBOLOY CEMENTED CARBIDE PRODUCTS

TOOLS · DIES · DRESSERS · CORE BITS · MASONRY DRILLS · WEAR RESISTANT PARTS

FOR THE MANUFACTURING · MINING · TRANSPORTATION · CONSTRUCTION INDUSTRIES

CONVERT CIVILIAN INDUSTRY TO VICTORY PRODUCTION

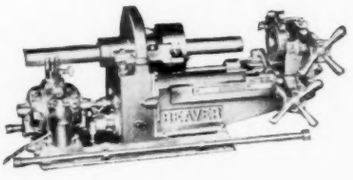
● "The problem seems to be less one of saving or even using 'small business' than of converting civilian business in general to war-time use," declared Stacy May, Chief of the Bureau of Research and Statistics, OPM, in presenting to a Congressional committee his views on the new national objective of producing forty billion dollars' worth of war materials in 1942. That objective can be attained only by immediate conversion of civilian business to all-out war production just as completely and as quickly as possible.

"Without such conversion upon a wholesale scale," said Dr. May, "we cannot reach such production goals as are here outlined, for our machine tool industry will be occupied for perhaps two years in equipping the new facilities provided for under existing and immediately pending appropriations."

The statements were made at a hearing of the committee investigating the problems of small business in the current emergency. Chairman Walter W. Finke of the Small Business Advisory Committee, Division of Contract Distribution, OPM, told the committee that the chief concern of his division is to find the quickest and most effective means of integrating the potential productive capacity of all businesses and industries of this nation, large and small, into the total war effort.

"To achieve maximum effectiveness in the war effort," he said, this nation must accept the philosophy that timely and effective production can be accomplished only by immediate integration of the productive resources of business and industry into the total war production pattern.

The A-B-C of Pipe and Bolt Machines

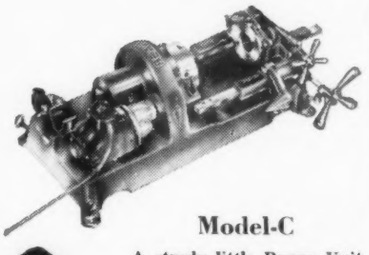


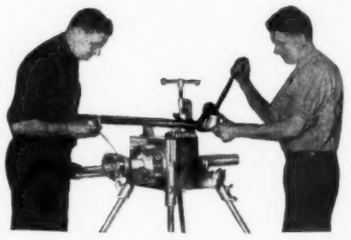
Model-A

A high-speed heavy-duty deluxe Pipe and Bolt Machine. Range ⅛ to 2-inch—up to 12-inch with geared tools and drive shaft. Bolts, ¼ to 2-inch. Wt. 415 lbs. Ask for Bulletin-A.

Model-B

A compact utility Pipe and Bolt Machine combining many features of Model-A with the easy portability of Model-C. Range ⅛ to 2-inch — up to 8-inch with drive shaft and geared tools. Bolts up to 1½-inch. Weight 280 lbs. Ask for Bulletin-B.





Model-C

A sturdy little Power Unit

Converts Hand Pipe Tools into Power Tools from ⅛ to 8-inches. Threads 8-inch in 6 minutes. Threads bolts up to 1½-inch. Equipped with automatic chuck wrench ejector—a safety feature. Two men can use it at the same time without interference. Easily portable — weighs about 150 lbs. Write for Bulletin-C.

BEAVER PIPE TOOLS

142 GROW AVE., WARREN, O.

Shaped Wire, Welding Electrodes and General Wire

★ In this period of emergency, when National Defense takes precedence, many find it possible to use new production standards on new or substitute materials.

We know from experience that many users of shaped wire have been able to adapt standard production shapes to replace shapes that require special mill runs.

The shapes shown above suggest a few of the many which are standard that PAGE turns out—widths up to ⅜" and end section areas to approximately .250 square inches.

It's easy to remember to write

PAGE FOR WIRE

PAGE STEEL AND WIRE DIVISION
MONESSEN · PENNSYLVANIA

In Business for Your Safety

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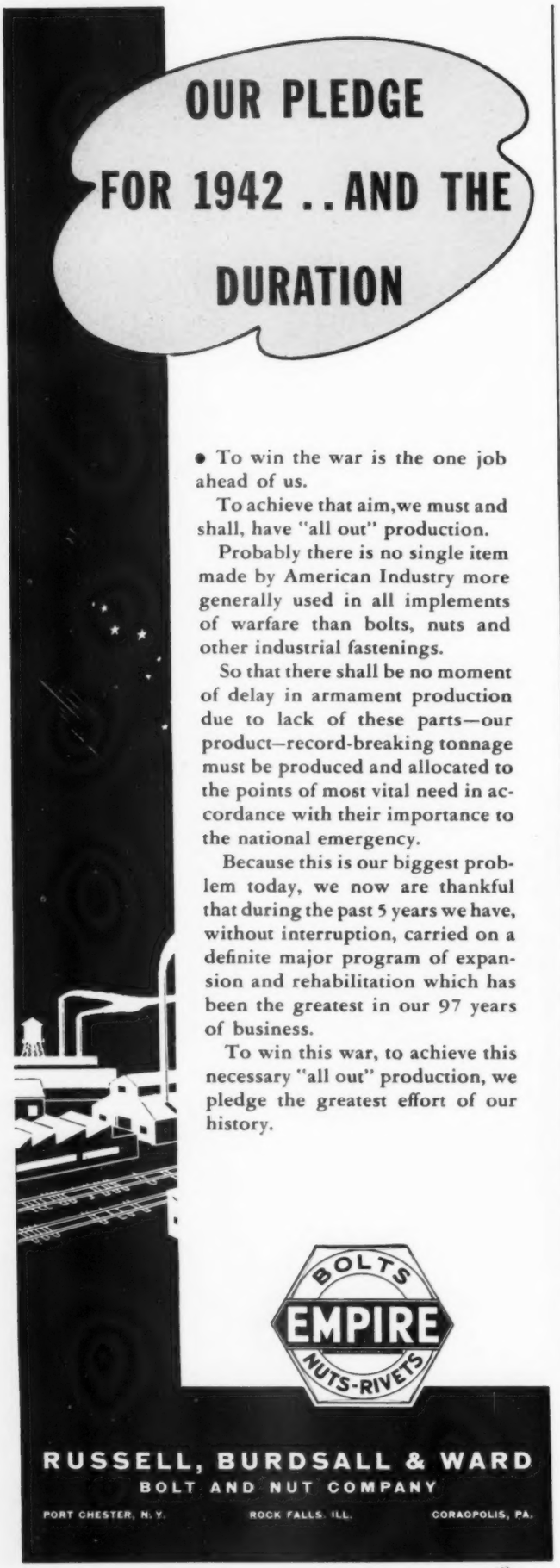
BRIDGEPORT, CONNECTICUT


OUR PLEDGE
FOR 1942 .. AND THE
DURATION
• To win the war is the one job ahead of us.
To achieve that aim, we must and shall, have "all out" production.
Probably there is no single item made by American Industry more generally used in all implements of warfare than bolts, nuts and other industrial fastenings.
So that there shall be no moment of delay in armament production due to lack of these parts—our product—record-breaking tonnage must be produced and allocated to the points of most vital need in accordance with their importance to the national emergency.
Because this is our biggest problem today, we now are thankful that during the past 5 years we have, without interruption, carried on a definite major program of expansion and rehabilitation which has been the greatest in our 97 years of business.
To win this war, to achieve this necessary "all out" production, we pledge the greatest effort of our history.
BOLTS
EMPIRE
NUTS-RIVETS
RUSSELL, BURDSALL & WARD
BOLT AND NUT COMPANY
PORT CHESTER, N. Y.
ROCK FALLS, ILL.
CORAOPOLIS, PA.

"Government alone cannot bring this about. There must be a utilization of those forces of imagination and initiative which have always characterized American enterprise, in order to produce a maximum cooperation as between business and business, and business and government, to the end that production may be increased and speeded up."

Further indication of the Government's interest in the plight of small business in the present emergency is given in the announcement by Commerce Secretary Jesse Jones, on December 25th, that a Small Business Unit has been organized in that department, to coordinate the activities of the department which are of use to proprietors and managers of small manufacturing and distributing companies during the war period. William Shepherdson, former management consultant for manufacturers and distributors, heads the new unit.

According to present plans, the Small Business Unit will devote its attention primarily to problems of internal management and organization, particularly as they arise out of the war and post-war situation. The program will be essentially educational in character, and will utilize the services of the field representatives of the Commerce Department, located in 31 key industrial areas throughout the country.

The "small business" classification includes more than 2,750,000 establishments, of which 169,000 are manufacturers, the others being wholesalers, retailers, service organizations, construction companies, places of amusement, and hotels. Approximately 8,350,000 persons are affected, as employers and employes.

NATIONAL DEFENSE
FITLER
ROPE
NEW CLASS C DEFENSE BRAND ROPE—
NO RESTRICTIONS ON ITS SALE
Like all good nephews of Uncle Sam, The Edwin H. Fitler Co. has adjusted its production to the present emergency. Under O.P.M. General Preference Order No. M-36, issued August 29th, 1941, manila rope was placed on the list of production limitations. To those that are entitled to priority preference rating of A-10 or better, Pure Manila Rope is still obtainable. For those industries not engaged on defense orders, Fitler has developed a "Class C Defense Brand" made from the maximum amount of manila fibre permitted under the new O.P.M. ruling.
THE EDWIN H. FITLER CO.
Manufacturers of Quality Rope for Over a Century—Established 1804
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EXACT WEIGHT Scale Model 366. Designed for small sacking operations. Rugged, handy, portable. Strong sack rest . . . dust cover for weights . . . accurate to ¼ oz. . . . Capacity to 27 lbs.

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INDUSTRIAL PRECISION SCALES

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SAVE MAN-HOURS FOR PRODUCTION!

Every worker and every minute is vital to our war production. You can't afford to lose precious man-hours through accidents. To provide adequate protection for additional workers and three-shift, seven-day-a-week operation, your first need is increased safety equipment — and quickly!

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WRITE FOR CATALOG showing full line of Pulmosan Safety Equipment

Pulmosan is ready to help you and places at your service a full line of Industrial Safety Equipment. All stocks are complete, with but few exceptions, and are available for immediate shipment. Safeguard all danger spots and keep your workers on the job. Let us know your needs.

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IT'S SAFER *because* IT'S FASTER

No mess or mopping-up or shut down from water and fire axes. C-O-TWO is harmless to equipment and materials. Industry now knows that carbon dioxide, the fastest fire extinguishing agent known to man, can smother a smoldering fire before it flames, and in a few seconds kill a raging oil or electrical fire.

Today more and more enterprising firms, who cannot afford a minute's loss of production, are equipping their plants with C-O-TWO portables, hose units, fixed built-in automatic and manual systems. There is C-O-TWO equipment—large or small—to protect your plant against fire. Why not write today for information about the C-O-TWO modern way of fire fighting? Do it now.

C-O-TWO Hose Unit. Portable or stationary —50 lb. cylinder

C-O-TWO is a registered trademark. To be safe, specify "C-O-TWO" and this company's name when ordering.*

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FOR YOUR EVERY SANDING NEED

If your distributor cannot supply you, write us direct. Also ask us for informative Abrasive Manual, and for free working sample offer. Address DEPT. K.

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ASK, ALSO, ABOUT CLOVER GRINDING AND LAPPING COMPOUND
— FAMOUS FOR 38 YEARS

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Coated Abrasives
Easily Identified by Color-Striping
and the Famous Clover Trade Mark

QUALITY ABRASIVES SINCE 1903

AN AIR-CONDITIONED WAR

The part which air-conditioning has in the conduct of our war effort is strikingly summarized in a report by the Carrier Corporation, covering installations made for the government and applications in munitions industries, camps, etc. Specific names of companies and locations of plants are withheld in deference to government regulations restricting the dissemination of such information. The list does not include scores of installations in companies engaged in defense work and of primary importance to war production, but covers only work done for the government itself during 1941.

Bombs are stored in concrete vaults in which the air is dehydrated to prevent condensation forming on walls and dripping on the shells. Similar vaults are also used for powder storage. Dehydration is a function of air conditioning equipment.

Fuse loading rooms are air conditioned to assure accurate timing through uniformity of the powder. Complete year 'round air conditioning with mechanical refrigeration is used for fuse loading rooms.

Percussion element loading rooms are held at constant temperature and relative humidity by air conditioning equipment to obtain a uniform product and also to prevent perspiration from the workers' hands marring metal surfaces.

Powder (black) is dried under controlled conditions of temperature and humidity. Production schedules can thus be carried through with a fixed drying time. Air circulation is held at the rate required for drying, and yet not to disturb the powder on the dry-

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It's simple as A B C. Set two rivets—or three—or four at once, and up goes your production automatically! Model 55 (illustrated) sets two rivets at once and has adjustable centers which are *easily* and quickly set. Other Multiple Rivet Setters in the Chicago Line set three and four rivets at a time . . . There's a wide range of types and sizes for practically any riveting problem.

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Tubular and Split Rivets in All Rivet Metals
Automatic and Manual Rivet-Setters for 1 to 4 Rivets at a Stroke

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Over 45,000 accurately made sprockets in stock for immediate shipment. Special sprockets made to order.

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CULLMAN WHEEL CO.

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THESE MODERN DESIGN **TAKE-UPS**

• Made in numerous types in a wide range of shaft sizes and bearing movements—for installation in any desired position, upon any suitable support.

Made with steel frames; combining unusual strength and light weight. Some employ babbitted bearings, while others use Link-Belt Friction Fighter Bearings which require only infrequent lubrication and provide highest operating efficiency.

They are all modernly designed for dependable, low-cost service. 0114

LINK-BELT COMPANY, Chicago, Indianapolis, Philadelphia, Atlanta, Dallas, San Francisco, Detroit, Boston, Los Angeles, Seattle, Portland, Ore., Toronto. Other Offices and Distributors in Principal Cities.

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A TYPE FOR EVERY SERVICE

THE DISTRIBUTOR

is the

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SUPPLY LINES FROM THE MANUFACTURING SUPPLIER

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OF INDUSTRIAL MARKETING

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gratefully acknowledges the dependence of modern industry on a strong body of Distributors, serving as the sales agents of the manufacturer and the procurement agents of the consumer. Only through such an institution can supply and demand be adjusted to the *known needs* of producers — as only the local Distributor knows them.

THE ALLEN MANUFACTURING COMPANY, Hartford, Connecticut, U. S. A.

THOMAS & BETTS INSULATE THEIR

"STA-KON" TERMINALS and "WEDGE-ON" LUGS

WITH

IRVINGTON PLASTIC TUBING

IRV-O-LITE XTE-30 extruded plastic tubing for the prevention of shorts and grounds on "Wedge-On" Lugs and "Sta-Kon" Terminals is featured by Thomas & Betts Co., Elizabeth, N. J., in their catalog. Here are two excerpts from their catalog. In both cases IRV-O-LITE XTE-30 is used.

"Insulating sleeves are available to prevent shorts between adjacent lugs or metal parts. Put the insulator on the wire first. After the "Sta-Kon" has been installed, just push the insulator on over the barrel of the terminal."

"These 'Wedge-On' Lugs are complete with insulating skirts encasing the lug body to prevent accidental shorts. This insulating skirt overhangs the end of the lug body, assuring full protection. It is flexible and therefore not marred by the tool in installing. It will not crack or split under abuse, and will not swell, loosen or distort due to moisture.

"Tensile strength: 2150 lbs. per square inch. Dielectric strength: dry, 732 volts per mil; wet, 310 volts per mil. Moisture absorption after 24 hours immersion, .94%. Temperature limit: 300° F, starts to soften. It is resistant to transformer oils, solvents, sulfuric acid, caustic soda, etc."

IRV-O-LITE XTE-30 extruded plastic tubing has exceptional resistance to tearing, abrasion, heat, fire and solvents.

Test IRV-O-LITE XTE-30 yourself. We will send you samples.

WRITE DEPT. 76.

Irvington VARNISH & INSULATOR CO.

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IRVINGTON INSULATION

PLANTS AT IRVINGTON, N. J. HAMILTON, ONT., CAN.

Representatives in 20 Principal Cities

ing trays. The powder dried under controlled conditions will flow and compress properly when loaded into primers and percussion elements.

Powder (smokeless) is dried by heated air delivered through specially designed trucks to obtain uniform heating and drying of the powder. The drying rates are important to production schedules. Fans and heating coils are parts of the air conditioning equipment which have been highly developed to meet air conditioning specifications.

Primers are washed and then dried in high temperature air. Drying removes all surface moisture from the metallic cups to prevent moistening of the detonating powder or other materials used for loading the primers. After loading, the primers are again dried to prevent excess moisture in the powder. The high efficiency of the drying equipment is a result of development in air conditioning research.

Solvents used in the manufacture of smokeless powders are reclaimed to provide great savings in the manufacture of munitions. Recovery systems require special duct work of heavy construction and carefully welded joints requiring craftsmanship trained in the air conditioning industry.

Tetryl requires a nitration or sulphation process during which temperatures of the materials must be carefully regulated. These processes generate heat which must be removed by jacket water which is in turn cooled by mechanical refrigerating equipment. The temperature is very critical. If it is allowed to exceed a certain level, the mixture becomes extremely hazardous. Chilling water to specified temperature and controlling temperature levels of liquid is an art developed by air conditioning engineers.

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Quality Springs

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Dayton Safety Ladders eliminate the expensive delays caused by the hazards of ordinary ladders. Men work faster, with more confidence, on the broad, firm platforms of Daytons. Ample room for tools and supplies. Rigid steel supports, tested airplane spruce give Dayton Safety Ladders great strength, stability, and extreme lightness of weight. Standard Rubber Safety Shoes at no extra cost.

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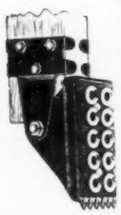

Install these safety shoes on your present straight ladders—guarantee additional safety. This Dayton Universal Safety Shoe prevents slipping. Your choice of renewable treads including Rubber Suction Grip Treads or Suberac Cork Treads. Shoe is instantly converted by a flip of the hand or foot for either inside use of treads or outdoor use of tempered steel spike toe.

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Type "A" is made on the double slider principle for low speeds and heavy torque.

• Be certain—find out by sending for Link-Belt Coupling Book No. 1845. It gives complete information on the Link-Belt line of couplings which includes a type and size for every service. Each type has a generous margin of capacity over actual requirements—each will give long service . . . require little maintenance.

Type "B" is made specifically for moderate shock loads and noiseless operation.

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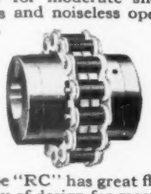
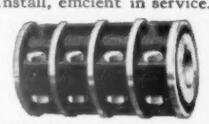


Type "RC" has great flexibility of design for meeting special conditions. Easy to install, efficient in service.

Flanged face couplings are made of cast iron and finished all over for proper balance. Many sizes.

Keyless compression couplings afford a simple means for the keyless connection of abutting shafts of standard diameter tolerances, on light-duty applications.



Ribbed compression couplings are split, and can be easily installed or removed from shafts in place.

***LINK-BELT* COUPLINGS**

TOPS ... AND HOW!

HALLOWELL STEEL BENCHES

TAKE just one feature of these famous "Hallowell" benches—tops. They're available in smooth, indestructible steel . . . attractive laminated wood . . . Masonite . . . or a combination of these in a wide range of sizes. Talk to the mechanics who use them and you'll discover "Hallowell" tops *are* tops! But tops aren't all.

Rigidity without costly bolting to the floor . . . extra sturdy construction throughout . . . interchangeability of parts for quick and comprehensive re-arrangement of benching . . . are added advantages available in each of the 1,367 bench styles and models in the "Hallowell" line.

These prefabricated benches are THE answer to requirements wherever there's work to be done. Catalog is yours free on request. Write—

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FOR *Custom Made* PAPER PRODUCTS & PROCESSES

It is our desire to offer any and every facility of this company to the defense program. With equipment and personnel used to attacking a wide variety of coating and adhesive problems, it is our feeling that, while none of our present products may have any greater application than uses we know of today, there may be need for special and unusual coatings, binders or adhesives on either paper or cloth and it is in these needs that we feel we could be of service.

Our special activities in recent years have included such diverse developments as adhesives for sticking to metals of various surfaces, lacquers and plastics; lacquer films for a wide variety of uses; lamination and lacquering of aluminum foils; decalcomania paper for revenue stamps. We'd like to work out time—money—or material-saving processes for you. Just tell us your problem—*and we'll be on the job!*

McLAURIN-JONES PRODUCTS *include*

GUMMED MATERIALS (i.e., label and Kraft papers; sealing, stay, veneer, and cloth tapes; holland, Sisaltape, etc.). COATED MATERIALS (i.e., casein coated, decalcomania, scientific chart and transfer papers, photo-mounting cloth and tissue); LACQUERED MATERIALS (pyroxylin coatings, photographic strip film, chart paper); LAMINATED MATERIALS, IMPREGNATING.

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BLUE STAR PLANET *Sealing Tape*

McLAURIN-JONES COMPANY

MILLS: BROOKFIELD & WARE, MASS.

Tracer composition is blended, mixed, and stored in conditioned air. The tracer powder is pelleted into small tablets by automatic machines, and must be correct for proper flow of material. The handling of tracer ammunition is extremely hazardous. Air conditioning prevents perspiration on the hands of the workers so that handling metal parts does not cause the surfaces to be moist thereby collecting small traces of powder that might cause explosions. Temperature and humidity of the air are controlled with unitary air handling equipment and mechanical refrigeration.

Food Storage: Low temperature air conditioning is used to preserve foods for army camps, navy and air bases and government cantonments. Meats, fruits, vegetables and milk are stored in large warehouses and in service boxes to supply mess halls. Whether the camps are large or small—the food served is at top quality because of low temperature air conditioning.

Efficiency and Comfort: To combat the enervating effect of extreme heat, headquarters of some camps and government buildings housing army and navy officers are air conditioned to maintain maximum efficiency and augment the health of the staff.

Fur Storage: Low temperature air conditioning is employed to preserve fur coats that are part of the equipment supplied airplane pilots. The application of fur coat storage is now adapted to the defense program.

Parachute Storage: Long recognized as a necessity in textile mills, air conditioning is now used to preserve the silks of parachutes while they are in storage, preventing mildew and other deteriorating effects when this very important "equipment" is not in use.

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Round and round they go—millions of them—doing every conceivable kind of grinding and polishing job in machine, pattern and die shops, tool rooms, defense plants, foundries, etc.

Designed for rapid, smoother work wherever high-speed portable grinders are used—these superior wheels of V/T Super Bond give 150% to 300% longer service, according to actual tests.

Chicago Mounted Wheels come in a wide variety of shapes, grains, grades and sizes.

New Catalog— Just off the press. Send for copy today.

CHICAGO WHEEL & MFG. CO.

Quality Grinders and Wheels for 40 Years

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Orange Core Helps To KEEP DEFENSE SHIPMENTS MOVING

In war, as in peace, the speed, strength and stamina of Orange Core Sealing Tape is serving industry well. It is helping to keep the wheels of production moving by providing quick, safe and economical protection for shipments of defense products. Its dependability is eliminating waste, loss and delay. We are proud that Orange Core quality is doing its part.

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Moore & Thompson • Div. Hudson Pulp and Paper Co., 220 E. 42nd St., N. Y. C.

Specify

VICTORIA TOILET TISSUES

Single Fold, Double Fold, or Black Core—for high quality at low cost. The Victoria Paper Mills Company, Fulton, New York.

Founded in 1880

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deliver more service with less servicing—and on those rare occasions when they need attention, it's easily given. Compact design, permits carrying heavy loads in small space. Generous size and accurate grinding of friction discs, back plates and floating plates give smooth action, permit gradual pickup, and positive engagement with no power loss. Adjustments are made from one point, without tools. Even relining is done without removing entire clutch from shaft.

Link-Belt Twin-Disc Friction Clutches are available for normal, heavy or extra heavy duty, sizes from 5½" to 42" diameter, rated at 1½-H.P. to 350-H.P. at 100 R.P.M.

Saved its Cost IN 9 MONTHS

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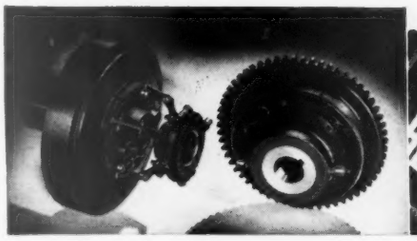

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J. W. McCartney has been appointed General Purchasing Agent of the Sword Steamship Line, Inc. and of its subsidiary, the Marine & Maintenance Corp., Bayonne, N. J. Mr. McCartney was formerly with the Harrison (N. J.) Bolt & Nut Co. for ten years, holding the office of assistant treasurer and general manager. For the past year he has been associated with the Sino Java Co., in charge of purchasing for the Government of the Netherlands East Indies.

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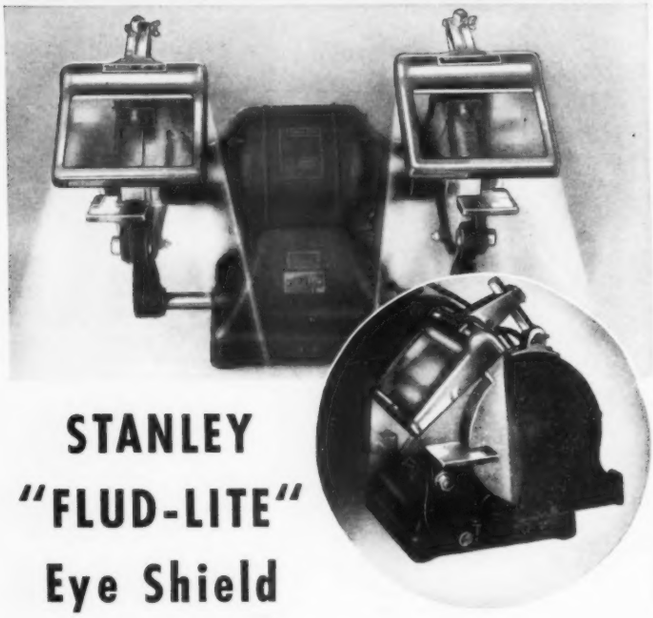

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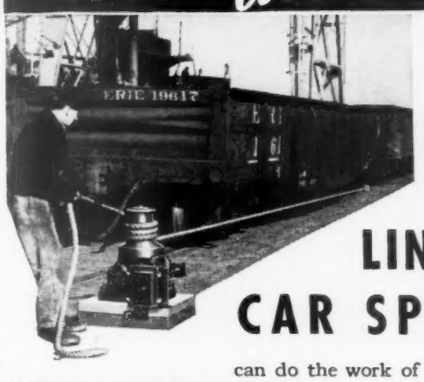

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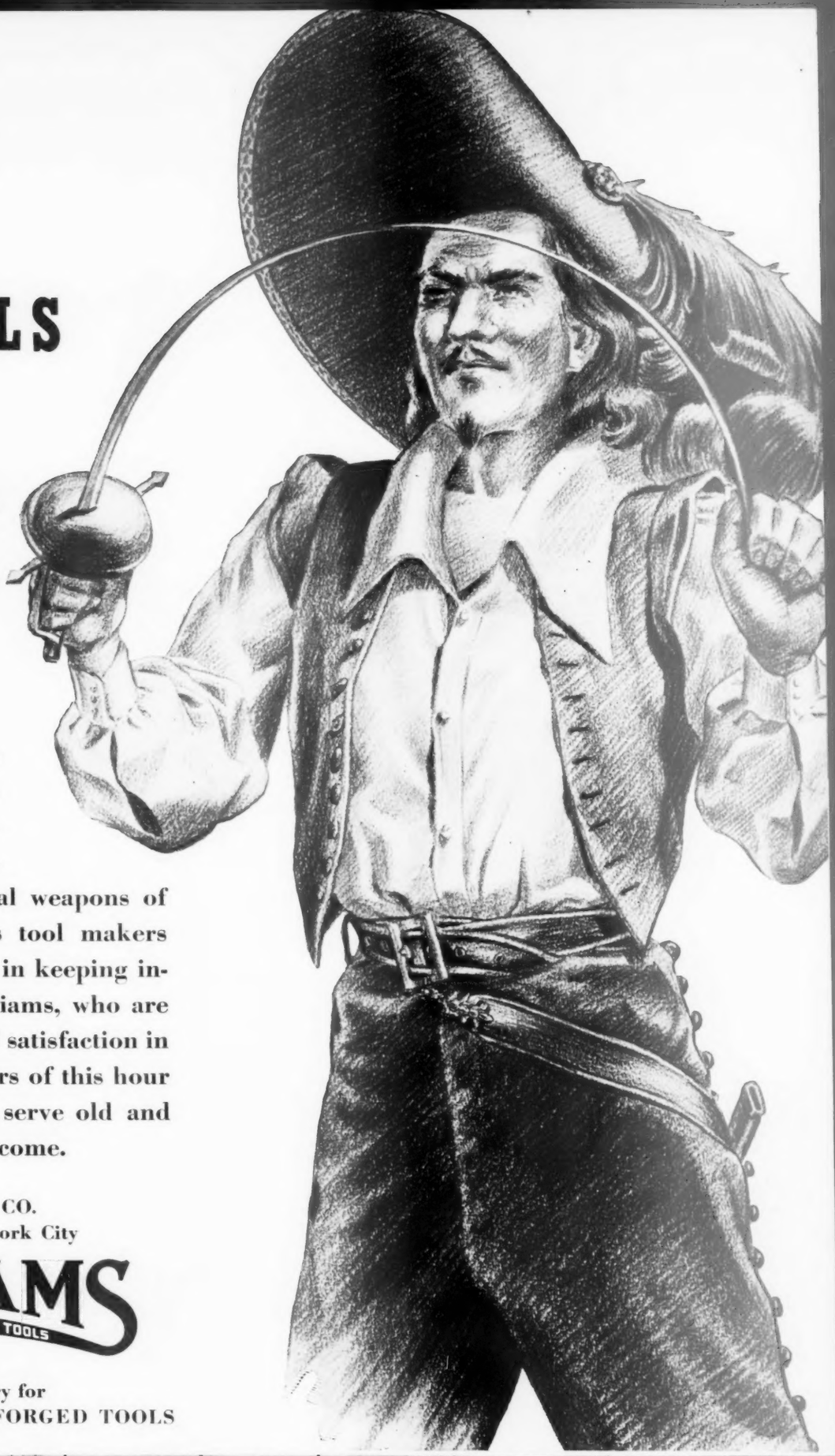

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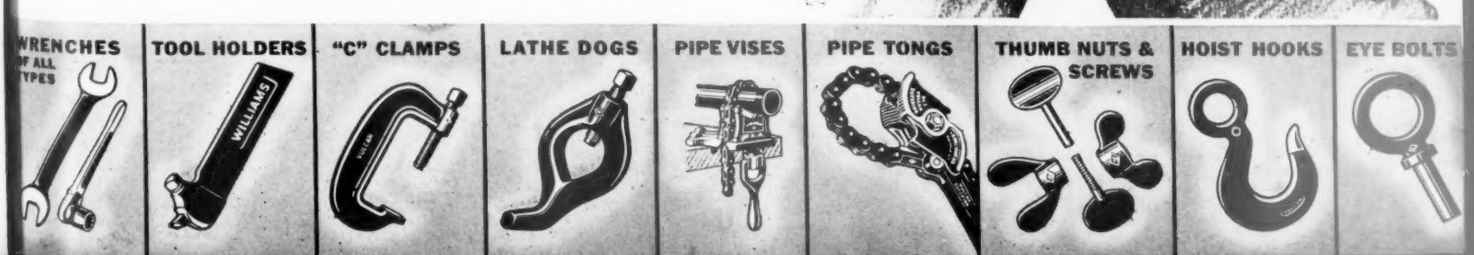

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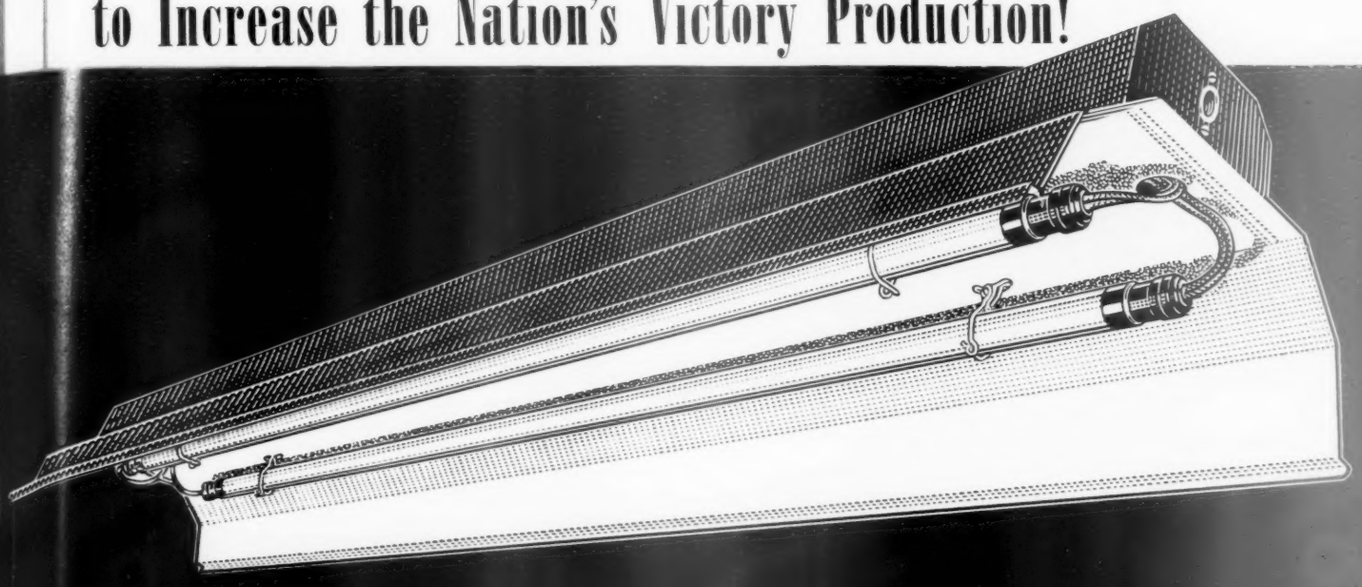

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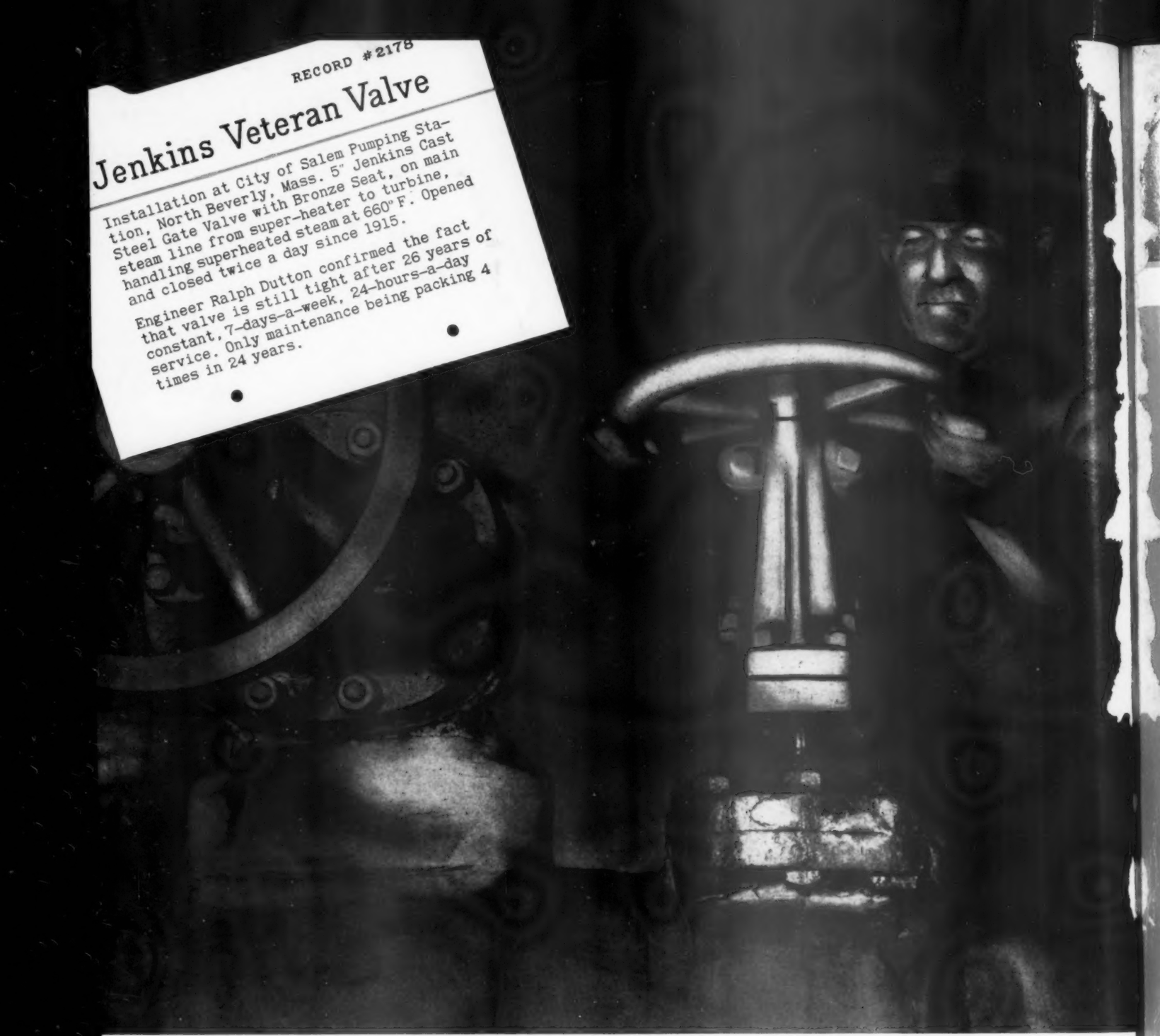
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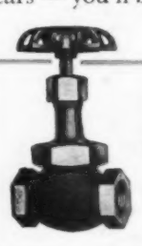

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